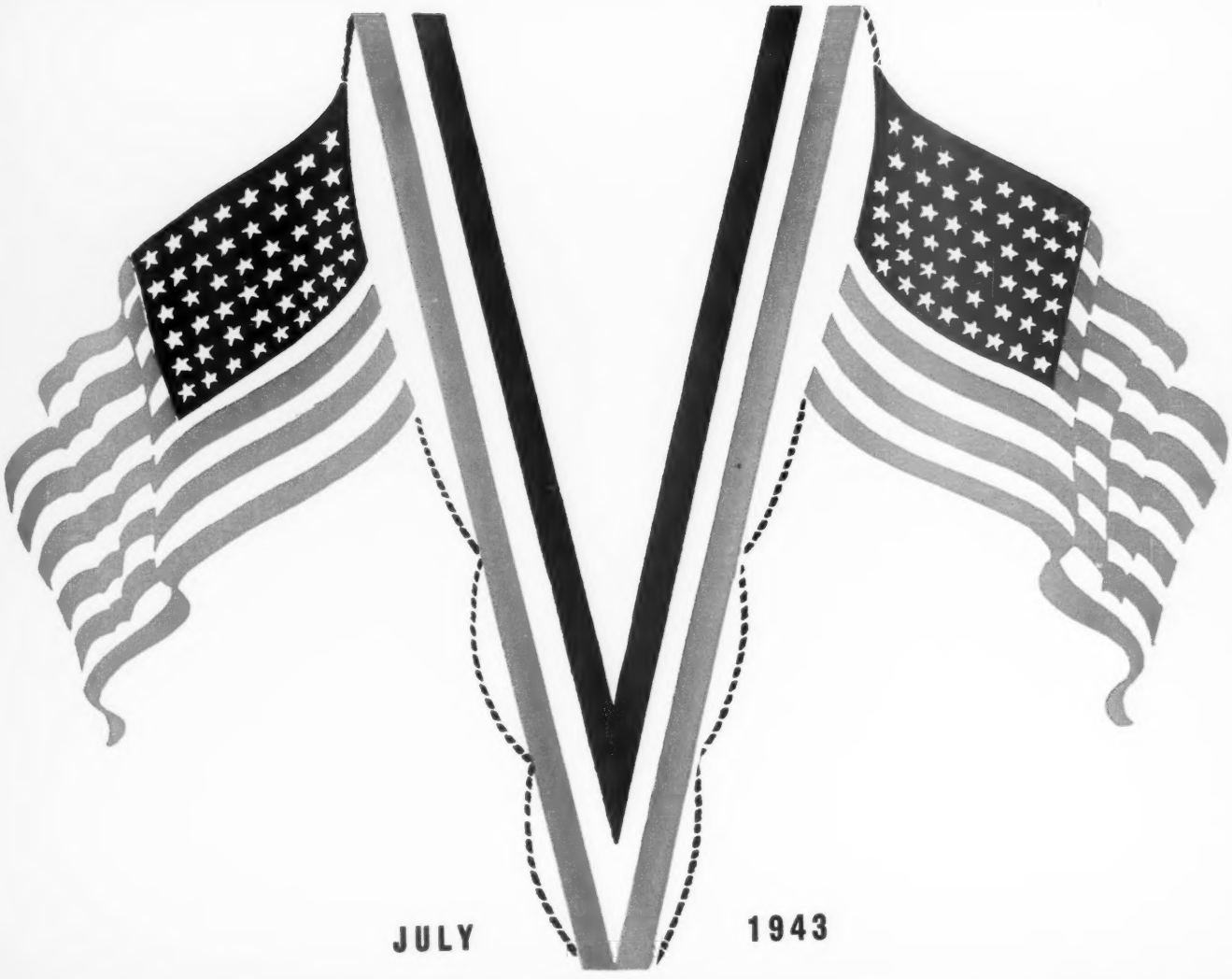
THE AMERICAN ENGINEER



JULY 1943

Published by THE NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

Bonds are essential

"It is clear that when the bond requirement is waived, labor and material men, as well as the Government, lose a form of protection which they have enjoyed for almost half a century."

From an article entitled:

"Restoration of Bond Requirements Will Aid War Effort" by Edward H. Cushman of the Philadelphia and District of Columbia Bars, appearing in "Credit and Financial Management" for April, 1943 — *A reprint in pamphlet form will be mailed without cost on request to*

INVISIBLE ARMOR

NATIONAL SURETY CORPORATION

VINCENT CULLEN, *President*

4 Albany Street, New York

THE AMERICAN ENGINEER

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Correction: On page 13, line 37, of the June issue, appears the following: "Preferably a member of the state Society and of one of its chapters, etc. etc. . . . " This is incorrect, as membership in state Society is not a requirement in any sense. References need only be professional engineers licensed in New York.

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Arthur V. Sheridan, *Editor* Robert Hall Craig, *Associate Editor* Frederick H. Zurmuhlen, *Business Representative*

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THE NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

Headquarters: National Press Building, Washington, D. C.

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2025 Eye Street, N. W.
Washington, D. C.

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Kindly report any errors or omissions to the Editor.

American Independence

BORN IN THE THROES OF STRIFE

CALLS FOR THE VIGIL THAT KNOWS NO RESPITE

THE INALIENABLE RIGHTS OF MAN

A DOCTRINE TO THE WORLD — A DECREE TO THIS NATION

Demands Service to God and Country and the Soldier Having Served Most Should Have Place at Peace Table

On July 4, 1943 one hundred and sixty-seven years will have elapsed since the unanimous declaration of the "Thirteen United States" . . . "We hold these truths to be self-evident — that all men are created equal; that they are endowed by their Creator with certain inalienable rights; that among these are life, liberty and the pursuit of happiness." One searches in vain for language that more concisely or more eloquently epitomizes the optimum of man's mortal existence. More, none on earth has the power to give — less, none has the right to decree.

No temporal power before or since the birthday of American Independence has so well justified establishment or so clearly evinced a destiny as this, the only true Republic that ever existed upon Earth. Today, greater spiritually and materially, than any nation in the pages of recorded time, it offers its blood on the battlefields of a war-torn world. May its sacrifices serve to consecrate and re-spiritualize those lands where its sons have fallen.

In the long vigil that has been necessary to preserve American institutions, each generation has played well the role inherited. Eternally must this vigil be continued. Man may hope and man may plan but so long as hate, fear, envy, greed, ambition and even the pangs of unrequited love continue to plague mortals just so long will strife inhabit this earth — treaties, leagues, unions, confederations, pacts and courts to the contrary notwithstanding. The good will essential to peace on earth is a hope that springs eternal in the human breast. To ennoble that breast has been to date an insuperable task.

Strangely enough it is in the midst of war that man's nobility is most manifest. There is little selfishness on the battlefield. This very nation was born from the womb of war's travail. Sacrifice and comradeship among men in arms find no parallels in the mansions of what the world terms peace. Even among warring armies there is far less hate and bitterness than between the constituent civilian populations behind the lines. Witness the memorable scene between Grant and Lee at Appomatox. Where would one find greater chivalry and mutual respect. Left to themselves, it is quite probable that Foche, Pershing, Haig, Ludendorf and Von Hindenburg would have quarelled less, manifested a more decent respect for the rights of peoples, as well as for one another, and produced a more effective peace than did the so-called allied statesmen who usurped the stage at Versailles.

There is reason to believe that the nations of the earth would today better appreciate and better appraise the ideals of the American Republic — and one submits that it differs in varying degree from all other self-styled democracies — had those who had fought their countries' battles been accorded a greater voice in the treaties among peoples. If this seems paradoxical, glance for a moment at the peace table achievements during the past 125 years, of the Metternichs, Talleyrands, Bismarcks, Clemenceaus and Lloyd Georges and decide for one's self whether or not their destruction of those objectives, for which this nation stands, could possibly have been surpassed by all the soldiers combined since the dawn of the American and French Republics. It is not soldiers who make wars — they but do the bidding of those whose characters all too often suffer by comparison. It is they, however, who spring to arms in defense of others. It is they who offer their lives, their fortunes and their sacred honors, not in word but in deed. Having borne the heat and burden of battle, they should not be denied a direct voice in behalf of their comrades-in-arms—small tribute indeed to those who fell or those who return but to endure prolonged misery of mind and body. Today, soldiers of war, might well be tomorrow, guardians of peace.

Not least in the ranks of the soldier, who has given the last full measure of devotion to this country, is the Engineer. Without him neither peace nor war could prosper very far. In the annals of American history, Engineers have written brilliant pages in every chapter. They have pioneered the march of western civilization. They have given wealth, strength and greatness to this nation. They have made life easier and more attractive for all mankind, and where in the pages of the history of any nation will one find greater courtliness, honor, sacrifice and nobility of character than attached to the persons of Washington, Lee, Mead, Goethals, MacArthur and others, soldier apostles of the inalienable rights of man — and engineers all in the service of God and country.

FEDERAL-AID PLANNING

INCREASE IN INTRODUCTION OF ENABLING LEGISLATION

SUGGESTS THAT CONGRESS IS CONCERNED

WITH THE EVENTUALITIES OF THE WAR

LITTLE INDICATION THAT ENGINEERS ARE ACTIVE

In Urging Preparation Against Unemployment

With manpower, labor, tax and other controversial but urgent legislation well on its way to accomplishment, Congress is beginning to give more attention to post war considerations. During recent weeks a number of measures, in the form of legislation and resolution, have been introduced or advanced in both House and Senate. All of these measures are of vital concern to Americans as a whole. Many of them are of special interest to Engineers.

Planning and preparing for the employment of millions of American citizens, who shall have endured the toil, sweat and blood demanded of our armed forces in foreign lands, is primarily an engineering problem. Most of the employment must come from the plans of engineers, whether in public or private enterprise. Among the legislation presently before the Congress are proposals for public works of every kind. That the purpose of the several measures is laudable there can be no question. However, the practicability and soundness of some merit consideration by those who will be called upon to effectuate the program of construction. Perhaps the legislation introduced has been prepared by, or with the aid of, engineers, perhaps not. For the benefit of all, another W.P.A. should be avoided.

AN interesting measure that arouses curiosity as to the type of study behind it is H.R. 2799 introduced on May 25th by Representative Snyder of Pennsylvania and referred to the Committee on Roads. It reads as follows:

"A BILL

"To provide for the location, survey and building of a system of superhighways, three east and west and six north and south highways.

"*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That the whole of the United States may have as near as possible equal facilities for transportation of commodities, a more justifiable avenue for caring for our unemployment situation, better adjustments for decentralizing our population, and to economize in the building of national highways and provide modern and adequate national defense equipment, the Department of the Interior is hereby authorized and directed to locate, survey, and build (a) three transcontinental highways, described in section 2 of this Act; (b) six north-south highways, described in section 3 of this Act; and (c) a system of airports, in connection with such highways, one such airport at least two miles square to be located at or adjacent to each of the eighteen intersections of such highways one with the other. Such locations and surveys and construction shall be conducted by the Department of the Interior, in cooperation with the Bureau of Public Roads, the United States Army Engineers, and the public bodies having jurisdiction over the system of highways in the several States, through which such transcontinental and north-south highways will pass.

"SEC. 2 (a) One of the transcontinental highways referred to in section 1 of this Act shall begin in vicinity of Boston, Massachusetts, and run west of Salem, Oregon, by way of Albany, New York; Cleveland, Ohio; Chicago, Illinois; Rapid City, South Dakota; and Yellowstone National Park.

"(b) One of such transcontinental highways shall begin in vicinity of Newark, New Jersey, and run west to San Francisco, California, by way of Cumberland, Maryland; Uniontown, Pennsylvania; Wheeling, West Virginia; Indianapolis, Indiana; Springfield, Illinois; Phillipsburg, Missouri; Denver, Colorado; Huntington, Utah; Duckwater, Nevada; and Yosemite National Park.

"(c) One of such transcontinental highways shall begin in vicinity of Savannah, Georgia, and run west to Los Angeles, California, by way of north of Mobile, Alabama; Baton Rouge, Louisiana; San Antonio, Texas; by El Paso, Texas.

"SEC. 3 (a) One of such north-south highways shall begin in vicinity of Miami, Florida, and run north to Canada, by way of Saint Petersburg, Florida; Reidsville, Georgia; Columbia, South Carolina; Raleigh, North Carolina; Richmond, Virginia; between Washington, District of Columbia, and Baltimore, Maryland; New Brunswick, New Jersey; Springfield, Massachusetts; and Concord, New Hampshire.

"(b) One of such north-south highways shall begin in vicinity of Buffalo, New York, and run south by Pensacola, Florida, by way of Pittsburgh, Pennsylvania; Uniontown, Pennsylvania; Charleston, West Virginia; Jonesboro, Tennessee; and Atlanta, Georgia.

"(c) One of such north-south highways shall begin in vicinity of Baton Rouge, Louisiana, and run to Canada, by way of Chicago, Illinois; Milwaukee, Wisconsin; Jackson, Mississippi; and Memphis, Tennessee.

"(d) One of such north-south highways shall begin on the Mexican border in the vicinity of San Antonio,

Texas; Hobart, Oklahoma; Ness City, Kansas; Broken Bow, Nebraska; and Pierre, South Dakota; Bismarck, North Dakota, to Canadian border.

"(e) One of such north-south highways shall begin in vicinity of El Paso, Texas, and run north to Canada, by way of El Morro National Monument, New Mexico, and Salt Lake City, Utah.

"(f) One of such north-south highways shall begin in vicinity of San Diego, California, and run north to Seattle, Washington, by way of Los Angeles, California; Bakersfield, California; Sacramento, California; and Klamath Falls, Oregon, and there be linked with highway to Alaska.

"SEC. 4. Each of the highways referred to in section 1 of this Act shall be one hundred feet wide; eight lanes of traffic; shall be built of the most modern, durable materials; and shall be equipped so as to be properly and abundantly lighted at night at all times, no light poles or obstruction to be within three hundred and fifty feet from center of the highway; and shall not pass through any cities or towns unless there is no other place for the road. The right-of-way for such highways shall be not less than one thousand one hundred feet wide, and the grade on all roads east of the Rocky Mountains shall be not more than 3½ per centum and on or west of the Rocky Mountains not more than 5 per centum. The set-up and program for the construction of these highways shall be perfected; estimates made, surveys made, blue prints completed by proper authorities as soon as possible after this Act becomes a law, so that at the conclusion of the World War we will be in position to put millions of men to work on constructing these highways.

"SEC. 5. Each of the airports referred to in section 1 of this Act shall be not less than two miles square; shall be of the most modern construction, hard-surfaced, runways suitably lighted, and equipped; and shall be so located that the intersection of the roads at which such airport is placed will be as nearly as possibly tangent to such airport.

"SEC. 6. There is hereby authorized to be appropriated, out of any money in the Treasury not otherwise appropriated, the sum of $12,000,000,000 to carry out the provisions of this Act. The estimated mileage of these highways is 18,000 miles. The portion of this sum to be used each year in the construction of said highways shall be designated each year by the Secretary of the Interior, and set aside on or before July 1 of each year in which it is to be used. Any of the amount designated to be used in any one fiscal year and not used during that fiscal year shall be returned to the Treasury of the United States and included in the sum set aside for the following fiscal year.

"SEC. 7. That the building of such roads shall be by contract to the lowest bidder per mile and no contract to be less than ten miles; and same to be supervised and accepted and approved by Federal Government Army Engineers or their agents.

"SEC. 8. The purchasing of rights-of-way for these highways shall be in the hands of a commission of ten, to be appointed by the President of the United States, at least five of which must be selected from the Army, Engineers who have had at least ten years' experience in a big way, in the field of operations such as this highway construction embodies. These men to receive a salary of $12,000 each per year.

"SEC. 9. One stipulation in each contract for the building of these highways shall be that the contractor shall employ, first, the unemployed men (between the ages of fifty and sixty) of the region where his unit of highways is being built and pay them such wages as shall be determined by the Government authorities designated to set said wages and hours for the various types of work to be done."

This is an appealing proposal. Are its methods sound? Are the recommendations too vague or too definite? Are the specifications too rigid? In substance, should engineers support it as is or should they suggest amendments?

ANOTHER BILL sponsored by Congressman Lynch (H.R. 2783) of New York on May 24th (referred to Committee on Ways and Means) and by Senator Thomas (Senate 1137) of Utah on May 27th (referred to Committee on Education and Labor) provides for an annual appropriation beginning June 1944 of $10,000,000 dollars to be apportioned among the States and used for Post War Planning and other purposes. It is known as the Federal-Aid Planning Act of 1943. Prefacing the measure is a statement of policy which seemingly bears Executive approval. It recommends:

WALTER A. LYNCH
Member of Congress—22nd Dist., N.Y.
Congressman Lynch was appointed head of H.R. Post War Commission, June 24, 1943.

"That it is hereby declared to be the policy of the Congress to provide for the preparation now of such plans as may be necessary to facilitate and expedite the selection and inauguration during the post-war period of those public works and improvements that will assist in providing employment opportunities and demands for industrial products when the Nation's men and machines are demobilized: *Provided,* That any plans made pursuant to this declaration of policy shall not represent in any sense a commitment by the Congress to appropriate, or by the President to request the appropriation of, funds to undertake at any time any public works or improvement project so planned."

Identical in both Houses, except for the expression of policy contained in the Lynch Measure, the legislation reads:

A BILL

"To provide for post-war planning, and for other purposes.

"Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled. That this Act may be cited as the 'Federal Aid Planning Act of 1943'.

"TITLE I

"SEC. 101. For the purpose of encouraging, cooperating with, and giving financial aid and assistance to the States, and the political subdivisions thereof, in establishing and supporting agencies to prepare, revise, and maintain comprehensive plans and programs for their development, there is hereby authorized to be appropriated annually, beginning with the fiscal year ending June 30, 1944, a sum not less than $10,000,000 which shall be used for making payments to the States which have complied with the provisions of section 103 of this Act and with the conditions hereinafter described in this title.

"SEC. 102. The funds authorized to be appropriated under Section 101 of this Act shall be apportioned for each fiscal year as follows:

(a) Fifty per centum of such funds shall be apportioned among all of the States in the proportion that the area of each State bears to the total area of all of the States.

(b) Fifty per centum of such funds shall be apportioned among all of the States in the proportion that the population of each State bears, according to the last Decennial Census immediately preceding, to the total population of all of the States.

"SEC. 103. A State, in order to receive the funds apportioned to it under section 102 of this Act, shall—

(a) Establish by law a State planning agency with adequate duties and powers, and provide such an agency with an annual appropriation which will enable it to operate reasonably well within its prescribed functions.

(b) Enact such legislation as may be necessary in order to enable the political subdivisions of the State, particularly the counties, metropolitan districts, cities, towns, and villages, to establish planning agencies for preparing comprehensive plans and programs for their jurisdictions.

(c) Agree to apportion all funds that may be paid to the State under the authority of this title in such a manner and form so that planning agencies established by the State and by the political subdivisions thereof shall share in the distribution in some reasonably proportionate fashion.

(d) Designate a custodian to receive and account for all funds that may be paid to the State under the Authority of this title.

"SEC. 104. (a) When the National Resources Planning Board (hereinafter referred to in this Act as the Board) finds that a State has complied with the conditions set forth in section 103 of this Act, the Board shall certify that fact to the Secretary of the Treasury and the Board shall then make such certification to the Secretary of the Treasury quarterly thereafter. Upon such certification, the Secretary of the Treasury shall pay, from the funds appropriated under the authority of section 101 of this Act, each quarter thereafter, beginning on July 1, 1943, to the agency designated by each State as custodian of the funds, 25 per centum of the amount apportioned, in accordance with the provisions of section 102 of this Act, to such State for the fiscal year, which amounts shall then be used solely for the purposes set forth in section 101 of this Act.

(b) The unpaid balances of all funds appropriated and apportioned to the States for any one fiscal year under the authority of this title shall revert to the Treasury of the United States at the end of the fiscal year.

"SEC. 105. Of the funds appropriated, apportioned, and paid to a State annually under the authority of this title—

(a) Not more than 10 per centum shall be used to purchase, rent, or lease office equipment.

(b) Not more than 5 per centum shall be used for the printing, binding, and distribution of publications.

(c) No part shall be used—

i. to purchase, rent, or lease land, buildings, or office space, or to construct, repair, or preserve buildings, works, or structures; and

ii. to compensate persons who have been selected, appointed, or promoted upon any basis other than that of merit and efficiency.

"SEC. 106. If any portion of the funds appropriated, apportioned, and paid to a State under the authority of this title shall, by any action or contingency, be used, after receipt thereof by the custodian designated by the State, for purposes other than those approved by the provisions of this title, such portion shall be replaced by the State to which it belongs, and until so replaced, no subsequent amount of the funds appropriated and apportioned under the authority of this title shall be paid to such State.

"SEC. 107. The Board shall report annually to the Congress on the distribution and use of funds appropriated and apportioned under the authority of this title.

"SEC. 108. There is hereby authorized to be appropriated annually to the Board a sum of $250,000 for the administration of this title.

"TITLE II

"SEC. 201. There is hereby authorized to be appropriated a sum not in excess of $75,000,000 for advances by the President, through such existing Federal agency or agencies as he may designate, to any State and any agency or political subdivision thereof (all such agencies being hereinafter referred to in this title as State or local agencies) for the making of such examinations, surveys, investigations, and architectural and engineering plans and specifications for specific public works and improvement projects as may be necessary to facilitate and expedite the selection and inauguration of such works and improvement in the post-war period (all such activities being hereinafter referred to in this title as plan preparation): *Provided,* That requests for such advances shall be

(*Continued on Page* 26)

MODEL LAW CONFERENCE

TEN NATIONAL GROUPS COLLABORATE

IN PREPARATION OF AMENDMENTS

BRINGING EXISTING INSTRUMENT TO DATE

AMERICAN SOCIETY OF CIVIL ENGINEERS

Acts as Host

Because of its importance to the profession, the results of a recent conference, held at the headquarters of the American Society of Civil Engineers, are herewith reproduced from a report signed by T. Keith Legare.

The decisions, reached by the conference, which will be submitted to the respective participating societies, although not unanimous in some cases, were in general indicative of a definite prevailing opinion. While the National Society of Professional Engineers has always accepted The Model Law as a minimum rather than a Model Act, it has consistently supported its proposals and an early approval of the latest amendments would be a step toward its own objectives of more thorough examinations, more comprehensive application of the Act and better enforcement of its provisions.

GEORGE T. SEABURY
Secretary—American Society of Civil Engineers

An acknowledgment of the efforts of Secretary George T. Seabury of A.S.C.E., both in arranging the conference and in making available the report thereof, is in order. The esteem in which Mr. Seabury is held enables him to render real service to the entire profession.

It is suggested that the reader compare the following proposals with the present provisions of the Model Law, which were prepared by a group of representatives from Engineering Societies at conferences on March 18, April 6, and May 26, 1937, at which time consideration was also given to comments, constructive criticisms, and suggestions received from other Societies that could not be represented in person, as well as from individual members of State Boards of Engineering Examiners.

Groups represented here: The American Society of Civil Engineers; the American Association of Engineers; American Engineering Council; American Institute of Electrical Engineers; American Institute of Chemical Engineers; American Institute of Consulting Engineers; American Institute of Mining and Metallurgical Engineers; American Society of Heating and Ventilating Engineers; American Society of Mechanical Engineers; American Society of Safety Engineers; Connecticut Society of Civil Engineers; Engineers' Council for Professional Development; Institute of Radio Engineers; National Council of State Boards of Engineering Examiners; National Society of Professional Engineers; Society of Naval Architects and Marine Engineers; and New York Association of Consulting Engineers.

Excerpts From Report to Conferees by T. Keith Legaré

"At the invitation of the Committee on Registration of Engineers of the American Society of Civil Engineers, representatives of ten national engineering societies interested in the registration of engineers met at the Society's headquarters on May 24, and collaborated in amendments of the 'Model Law' for the Registration of Professional Engineers and Land Surveyors. The conference was called to order by T. Keith Legaré, Chairman of the Committee and Presiding Officer of the meeting. Eleven amendments were approved, the principal ones being the insertion of provisions for Engineers-in-Training. The ten national engineering societies were represented as follows:

COMMITTEE ON REGISTRATION OF ENGINEERS, American Society of Civil Engineers, T. Keith Legaré, Chairman, Robert H. Craig, Harold G. Sours, N. W. Dougherty. AMERICAN ASSOCIATION OF ENGINEERS, Arthur Richards, President, James H. Griffin. AMERICAN INSTITUTE OF CHEMICAL ENGINEERS, Stephen L. Tyler. AMERICAN INSTITUTE OF CONSULTING ENGINEERS, C. F. Scott. AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS, C. R. Beardsley. AMERICAN SOCIETY OF MECHANICAL ENGINEERS, R. L. Sackett. AMERICAN INSTITUTE OF MINING ENGINEERS, A. B. Parsons, Secretary. NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS, Edward Larson, Executive Secretary, J. C. Riedel, Arthur V. Sheridan, D. B. Steinman. SOCIETY FOR THE PROMOTION OF ENGINEERING EDUCATION, R. L. Sackett. NATIONAL COUNCIL OF STATE BOARDS OF ENGINEERING EXAMINERS, T. Keith Legaré, Executive Secretary, L. A. Martin, D. B. Steinman.

Provision For Establishing The Grade Of Engineer-In-Training

"The Chairman explained that the purpose of the meet-

ing was to discuss certain proposed revisions to the Model Registration Law, the principal and first topic being an amendment providing for the establishment of the grade of 'Engineer-in-Training'. During the discussion of this and other topics, all present participated.

"Dr. Steinman reviewed the events which had occurred in the State of New York regarding this subject:

"A year ago a group of engineering graduates in that State petitioned the State Society of Professional Engineers and the State Education Department to see what could be done toward establishing examinations for Engineers-in-Training, suggesting that the examinations for the Professional Engineers' License be divided into two parts, the first to be given soon after graduation and the second to be given after completion of experience requirements. The State Education Department thought favorably of the idea and, following conferences with all interested parties, the Board of Examiners drew up rules which were adopted by the State Education Department and the Board of Regents — and are now in effect. The first examinations under this new plan are to be given the latter part of June. Prospective graduates have been very enthusiastic, and are getting together and establishing unity among themselves, looking forward to being recognized by the profession and becoming 'Engineers-in-Training'.

"In the past, the examination for Professional Engineer in New York State has been given in three parts. The first two will form the new preliminary examinations. Those are referred to as covering 'fundamental engineering subjects'. The remaining part of the examination is the more practical one based largely upon the experience of the applicant.

"For many years in New York, examinations have been required of graduates as well as non-graduates, so the transition is natural and many are glad to avail themselves of the privilege of dividing the examination into two parts. The State of Ohio has already established the term 'Engineer-in-Training' in its law, and similarly the passing of the preliminary examinations is a prerequisite. The Model Law is designed to precede application. This meeting, therefore, should record in the Model Law the forward step that has already been taken by some States and will shortly be taken by others — something that has been approved in principle by the profession as a whole.

"Consideration was given to the first of three recommended revisions of the Model Law with respect to the Engineer-in-Training. It was proposed to add to Section 2, after the definition of Professional Engineer, a new paragraph reading:

Definition — Engineer-in-Training

The term Engineer-in-Training as used in this act shall mean an applicant for registration as a professional engineer who has successfully passed the examination in the fundamental engineering subjects prior to completion of the requisite years of experience in engineering work, as provided in Section 14 of this act, and who shall have received from the Board, as hereinafter defined, a certificate stating that he has successfully passed this portion of the professional examinations.

"Dean Dougherty expressed the opinion that the student who had graduated from an accredited engineering school should be placed in the status of Engineer-in-Training without having to take written examinations before the Registration Board. Dr. Steinman stated that his experience had been that many students who had been graduated from accredited schools had not passed the first examination. He added that the mere fact that they are obliged to pass an examination in fundamentals will keep them on their toes educationally. Last year when the conference was held at Albany with the officials of the New York State Education Department, members of the State Board of Engineering Examiners and other representatives, this idea seemed to have the hearty concurrence of all. E.C.P.D. has been preaching not only the desirability of big-brother relationship for the guidance of the young engineering graduate, but also the importance of keeping the young engineering graduate in the mood for constant study and learning; to make him realize that this process of learning should not stop on the day of graduation; that he has not attained his high water mark of knowledge on the day of graduation; that he should form the habit of continuous study after graduation until he secures his license, so that he will form a life-long habit of studying outside of college.

"Some States have not only leading universities, but also many other schools having varying degrees of thoroughness and varying standards. The graduates of universities in one State may find themselves confronted with higher standards in other commonwealths, thus indicating the need for uniformity. Also some of the subjects in the registration examinations may not be covered in all engineering schools. It is to be expected that those deficiencies will be made up after graduation. In the professions of medicine and law, no matter from what school a young man comes, he must pass a complete and thorough examination in fundamental as well as applied subjects. This is the goal engineers should strive for. No individual limitation should influence lowering the standards in the Model Law. This Act should be written with an ideal in mind. All States will require, sooner or later, written examinations not only from the non-graduate but from the degree candidate as well.

"Mr. Sours drew attention to the fact that recently an amendment to the Registration Law in Ohio had been passed, providing for the Engineer-in-Training. A candidate is permitted, if he so elects, to take the examination in fundamental subjects at the completion of his four years in training. He then must complete four years more of active experience before he is permitted to take the second part of the examination. Ohio faces a difficult problem in determining which colleges and universities shall be accredited. For this reason the man coming out of college should be permitted to take basic examinations at that time. The Law, when effective, makes it compulsory for the applicant to take both examinations, but provides that he may take them in stages; the first, before he can become an Engineer-in-Training; the second, be-

fore he can be registered as a Professional Engineer.

"For a long time there has existed the problem of dealing with men who seek professional status without graduation from accredited schools. In New York this problem has been solved by requiring candidates to be either graduates or to have eight (8) years of acceptable experience in lieu thereof, before admission to the examination for Engineer-in-Training. In Ohio four (4) years of acceptable experience is the alternative of graduation.

"It was *voted* that a paragraph 'Definition—Engineer-in-Training' be added to Section 2 of the Model Act, after the definition of 'Professional Engineer':

The term Engineer-in-Training as used in this Act, shall mean a candidate for registration as a professional engineer who is a graduate in an approved engineering curriculum of four years or more from a school or college approved by the Board as of satisfactory standing; or who has had four years or more of experience in engineering work of a character satisfactory to Board; and who, in addition, has successfully passed the examination in the fundamental engineering subjects prior to completion of the requisite years of experience in engineering work, as provided in Section 14 of this act; and who shall have received from the Board, as hereinafter defined, a certificate stating that he has successfully passed this portion of the professional examinations.

"The second recommended revision providing for the amount of fee to be charged for taking the examination in fundamental engineering subjects was considered. All agreed that the fee should be as low as possible.

"It was *voted* that there be added to Section 13, between the first and second sentences of the second paragraph the following:

Application to take the examination in fundamental engineering subjects prior to completion of the requisite years of experience in engineering work shall be accompanied by a fee of seven dollars and fifty cents ($7.50). This amount shall be credited against the total fee required for registration as a Professional Engineer.

"With respect to the third recommended revision, it was *voted* to add at the end of the first paragraph of Section 14 the following:

The Board shall issue to each applicant upon successfully passing the examination in fundamental engineering subjects a certificate stating that he has passed the examination and that his name has been recorded as an Engineer-in-Training.

General Requirements For Registration

Chairman Legaré suggested consideration of inserting in Section 12—(1) (a), at the end of the paragraph before the word 'or', the following:

. . . provided that in a case where the evidence presented in the application does not appear to the Board conclusive nor warranting the issuing of a certificate of registration, the applicant may be required to present further evidence for the consideration of the Board, and may also be required to pass an oral or written examination, or both, as the Board may determine.

"It was believed that this provision would take care of the college graduate whose standing in college is not good and who may not qualify in experience, and it was *voted* that this proposed insertion be adopted.

RECIPROCITY

"The Conference after discussion *voted* that the word 'Reciprocity' as the title of Section 19 of the Law be changed to 'Inter-State Registration'.

Graduates In Approved Engineering Courses That Have Been Reduced To Less Than Four Years.

"There was discussion of the accelerated courses now offered by many engineering colleges. It was felt that the three-year accelerated courses were equivalent in all respects to the four-year regular courses, but that this was not a matter for the Model Law, since it is only a temporary situation, and that each individual State Board would have to employ discretion. The National Council of State Boards of Engineering Examiners, when it meets, may adopt recommendations on the subject.

Employees and Subordinates

It was *voted* to amend Section 22 (d) to read as follows:

(d) The work of an employee or a subordinate of a person holding a certificate of registration under this act, or an employee of a person practicing lawfully under paragraphs (b) or (c) of this Section; provided such work does not include final designs or decisions and is done under the direct responsibility, checking, and supervision of a person holding a certificate of registration under this act or a person practicing lawfully under paragraphs (b) or (c) of this Section; etc.

Employees Of Public Service Companies

"The Conference considered the suggestion that new paragraph (f) 'Employees of Public Service Companies' be inserted.

"The opinion was expressed that if inserted, there is danger that all activity of employees of Public Service Companies will be considered exempt from the law; also that registration of engineers and architects in the various States is required even though their work is subject to approval by various governmental or regulatory bodies. The additional protection and control is needed. The fact that any work is checked by a supervisory body should not be an excuse for waiving the law. Because of the belief that the inclusion of this paragraph might lead to complications, the Conference *voted* that suggested paragraph (f) be *not* adopted.

General Provisions: Section 1

"It was *voted* to insert in Section 1, 'General Provisions', after the word 'property', in the second line, the words *'and to promote the public welfare'*, and after the word 'person', in the third line, the words *'in either public or private capacity'*.

The Section will then read as follows:

"General Provisions

Section 1—Be it enacted by the General Assembly of the State of ..... that in order to safeguard life, health and property, and to promote the public welfare, any person in either public or private capacity practicing or offering to practice professional engineering or land surveying, shall hereafter be required to submit evidence that he is

(*Continued on page* 26)

THE ARMY ENGINEERS
SOME HISTORY AND COMMENT

"Experts Said It Couldn't Be Done But The Damn Fool Engineer Didn't Know That So He Just Went Ahead And Did It"
Said General John J. Pershing

(Courtesy of the New York World Telegram)

IN the June 10th edition of the New York World Telegram, Roger Stuart — Staff Writer — offers a worthwhile commentary on the historical background of the corps concerning whom "military experts are agreed that but for the proficiency of the Engineers the speedy North African victory could not have been achieved." "Through the mud and rubble of Tunisia alone they laid down roadways at a rate of four miles an hour, which . . . is a fast speed for marching rather than building."

ENGINEER SERVICE 168 YEARS OLD

"It is not alone in wartime jobs that the Army Engineers have proven their abundant value. They have pioneered in construction, both in war and peace, ever since June 16, 1775 — exactly 168 years ago next Wednesday — when Col. Richard Gridley was appointed George Washington's first chief engineer, at $60 a month. Gridley, incidentally, was given two assistants, each of whom drew $20 a month.

"From that meager beginning was built the organization which in the years following was to rebuild a continent — engineers, fighting men all, who were to drain swamps, survey the land, build railroads and highways, construct dams and generally pave the way for America's amazing industrial progress.

"Other branches of the army always have had largely wartime functions. The engineers constantly have added peacetime activities. In 1853, for example, five columns of engineer troops were sent out by Secretary of War Jefferson Davis to locate possible routes for a transcontinental railroad. Four of these columns located routes which are identical, or nearly so, with the Sante Fe, the Union Pacific, the Southern Pacific and the Northern Pacific.

CIVIL WAR RECORD

"And all the while they were busy fighting as well as building. Both before and after the Civil War there were the Indian campaigns which required their participation, while during the war records reveal such items as these:

" 'At Malvern Hill the battalion (of engineers) was posted on the edge of the woods to fight as infantry . . . ' 'The night before Antietam the battalion rendered three of the fords across the Antietam Creek passable for artillery . . . ' 'At Chancellorsville, the battalion threw a bridge at Franklin Crossing . . .' 'After the retreat from the Rappahannock the battalion repaired the pike from Stone Bridge on Bull Run to New Baltimore. . . .' 'At the Battle of the Wilderness the battalion acted as infantry . . .'

"Rivers and harbors, the Panama Canal, more railroads — such were the scenes of engineer activity during the period between the Civil and World wars. As the organization grew, ceasing to exist as a battalion and becoming a corps, it was constantly finding new duties to perform.

"Then came the big test — World War I, when entire ports had to be built or rehabilitated, while equally gigantic tasks were faced in the matter of highway and railway systems to be constructed, great depots, sawmills, quarries and factories to be established.

THE CORPS EXPANDED — WORLD WAR I

"All these things, and more, had to be accomplished behind the lines, while up at the front other engineer units were building bridges, repairing roads, laying out fortifications and on numerous occasions fighting with rifle and bayonet side by side with the infantry.

"Amazing indeed was the expansion of the corps in the two-year period 1916-18. From a mere 256 officers and 2200 enlisted men in 1916 the corps grew to 11,175 officers and 28,500 enlisted men in 1918. So great was the accomplishment of these men that General Pershing was moved to comment:

" 'Among the most notable achievements of the American Expeditionary Forces was the large program of construction carried out by our engineer troops in the Service of Supply and elsewhere . . . The scientist said it couldn't be done, but the damn fool engineer didn't know that — so he just went ahead and did it!

BEFORE AND IN WORLD WAR II

"Rather than letting down when the war ended, the corps (reduced to a peacetime strength of 600 officers and 4000 enlisted men) again went to work on rivers and harbors, flood-control projects, highway building and electric power surveys. And as World War II approached the corps took upon itself the task of building camps and barracks, as well as ordnance and industry plants.

"One of its biggest single achievements during this period, of course, was the construction of the Alcan Highway, when tractors punched northward through virgin territory where no man had been before.

"What is being accomplished by the engineers in this war is, naturally, a matter not for publication. It can be mentioned, however, that in New Guinea and Australia alone scores of airdromes and approximately 15,000 miles of roads have been built in the past year.

"The program is constantly being enlarged. As it continues to grow, more and more skilled workmen will be needed to fill the ranks of the engineers. For that reason civilians up to 50 years of age who are trained in technical trades now are being taken into the corps as specialists.

"As throughout the 168 years of the corps' history, these men are being taught to fight as well as build. The record of one particular engineer maintenance company shows, for instance, that its members, all former employees of a tractor manufacturing company, can use a rifle and a shovel with equal dexterity. On the range recently 91.3% of the men in this outfit qualified as rifle marksmen. *The Army Engineer is both technical expert and soldier".*

BRAZILIAN TRANSPORTATION

A BRIEF STORY OF ITS DEVELOPMENT

With Some Reflections on Engineering and Economics as Applied to American Transport Systems

From An Address by Ingr. Romero Fernando Zander

(Delivered at the 1943 Annual Meeting of the New York State Society of Professional Engineers)

(Continued from June Issue)

DR. ROMERO FERNANDO ZANDER
Brazilian Engineer Representative in U. S.

This story of the development of Brazilian Transportation, as outlined by Dr. Zander, began in the June issue of the American Engineer. The author, while dealing principally with the railroads of his native country, outlines the growth of river, highway and air transport and invites comparison with the problems presented by the expansion of this nation's transportation systems. For further information on the subject kindly refer to the first installment.

COASTAL AND LONG DISTANCE SEA NAVIGATION

The Brazilian Government and private capital owned and operated, in 1940, the total of 276 ships, total gross tonnage 513,176, total net tonnage 304,065, total cargo tonnage 657,342. There are twenty-one companies having more than three boats each and forty-three companies operating less than three boats each. The last forty-three companies own a total of fifty-three ships with the cargo tonnage totaling 15,510 tons. The largest and most important Brazilian steamship company is the government owned and operated Lloyd Brasileiro, which operates not only coastal and river navigation, but also overseas shipments. This company owns seventy-six steamers with total cargo capacity of 377,591 tons. Before Brazil entered the war, this company maintained regular lines to Europe and to South Africa. It still operates regular lines to the United States of America, Central America and Venezuela. To the South, oversea lines are operated to Uruguay, Argentina and Paraguay.

The Merchant Marine of Brazil stands in fourth place in America, being surpassed only by the Merchant Marine of the United States, Canada and Panama. The total in 1940 of Brazilian imports was 4,588,157 tons and the exports 3,169,636 tons, to which the Brazilian Lloyd (Lloyd Brasileiro) contributed on a large scale.

Compared with these important export figures from overseas, it will be interesting to note the operating figures of the coastal lines. In 1940, the thirty principal Brazilian ports registered the total entry of 35,087 coastal navigation ships with the total of 20,291,494 register tons. The total tonnage of Brazilian merchandise handled at these thirty ports and transported through Brazilian coastal lines reached 7,966,967 tons. This figure, compared with those of foreign exports and imports enables us to give the proper attention to the importance and potentiality of Brazilian manufacturing, extractive industry and agriculture, for a tremendous amount of this trade is the result of the interchange of natural and manufactured products all produced in the country.

Brazilian coastal navigation and the pertinent river navigation lines are as old as the country itself; since the Declaration of Independence they were the object of prime importance to all governments; they grew rapidly since the establishment of the Republic in 1889, with all the consequences of free national commercial competition. Deficits were covered by the National Treasury. Some time ago the first step to regulate the situation was the inauguration of fixed rates. This, however, was not the solution, as the schedule showed a deficit because of the competition which still remained. A very difficult and successful measure was taken in 1940 by President Vargas, who instituted the Commission of Merchant Marine, whose principal mission is to study the means of unifying all Brazilian Navigation Companies and, literally, to solve all problems of freight, schedules, ports to be served by different companies, etc. Recently, due to the war, the Commission has been placed under the authority of the Brazilian Navy.

ROADS

Since 1927, a great interest has existed in Brazil in the subject of good road systems. Until this year there were several under construction by States and Municipalities. In 1927 the first Federal Government sponsored work occurred, but was limited to two roads, the Rio Petropolis and the Rio Sao Paulo. The first is a new road from the Capital of Brazil to the famous summer resort in Petropolis; thence up to the State of Minas Geraes, with the

old imperial Uniao e Industria. In 1930 the whole Brazilian road system extended for 113,000 kilometers. From 1930 to 1940 more than 116,000 kilometers were constructed and from 1940 the same average of constructing 33 kilometers of road per day has been continued. The States of Sao Paulo and Minas Geraes combined have 90,000 kilometers of roads, which means that they have almost 40% of all the roads in Brazil.

The National Department of Roads, created in 1934 is now responsible for the supervision of all federal road projects. Several of the States have their own autonomous road departments. However, a systematic plan for the construction of roads country-wide is still needed. It has not, as yet, been clearly established which roads should be federal, state or municipal, from the standpoint of construction and maintenance. In a country with the immense area of Brazil, it is logical that, with regard to quantity and extension, the largest task belongs to the States. The State activity, however, should not be permitted to go on without previously established plans, coordinated with the national road net and with the activities of neighboring states. In turn, cooperation and assistance should be provided by the States to the municipalities, which generally do not have the technical organization needed for road construction and maintenance.

The most important road, now under construction, is that connecting the extreme South with the extreme North of the country; with a total extension of 7,500 kilometers. A great part of this road is already in operation. Of the remainder, some of the work is being done by the Federal Government and some by the Governments of the States through which the roads are to pass. In the northeastern states of Brazil, which are periodically affected by droughts, the road program is in charge of the special department of the Federal Inspectorate of Public Works against droughts.

It has been proven by statistics in this country that the average increase of the life of a motor vehicle, due to the improvement of roadbeds, has been 20%. If we assume that in 1950 the number of Brazilian motor vehicles will reach 240,000, and assuming the average life to be eight years, the country has to import 30,000 new motor cars and trucks yearly. If the roadbeds could be improved as in the United States, the annual necessity would be only 25,000 cars, and the saving in investment, gasoline, spare parts and tires, etc., would permit large amounts to be used for improving roadbeds. It is certain that good highways and roads require tremendous initial investments. While the road transportation and motor car utilities are objects of general taxation, either by the Federal Government or the States, the road construction and maintenance still depends on the federal and state budget appropriations. In the Decennium 1925 to 1936, the import duties on automobiles, trucks, tires and gasoline amounted to a respectable total, of which only 21.4% was designated for the construction and maintenance of federal highways. The National Convention of Transportation at the Porto Alegre meeting of 1935 therefore recommended that the taxations of highway transportation should constitute a separate cash account, and should be spent by autonomous highway departments, independent of government budgets. The first step in this direction, recognizing also the importance of the collaboration of the States in the solution of the road transportation problem, was the decree 2:615 dated September 9, 1940, allocating to the States a part of the income from the duties of above described utilities, with a condition in the constitution setting up a special cash account for the construction and improvement of highways.

AVIATION

Commercial aviation in Brazil was initiated in 1927 by the creation of the Empreza de Viacao Aerea Riograndense. Until then, Brazilian Civil Aviation was limited to short flights for pleasure. For 1940 the traffic section of the Ministry of Aviation estimated an increase of 26% in the transport of passengers over and above 1939, or 323% on the total for 1935. The number of airports available for commercial traffic is constantly varying, depending on the movement of the calls and the creation of new lines. In 1940 there were 100 commercial airports.

The government has tried to increase the air transportation and communication. The Aviation Companies have at their disposal ample direct and indirect subsidies which allow them to maintain remunerative economic operations. Among the indirect subsidies may be cited the duty exemptions for all the material intended for aviation as well as for fuel and lubricating oils. The cost of air transport in Brazil is comparatively high, although from year to year great improvements are being made. We are still far from offering attractive charges for passengers per kilometer, this point being of vital importance in the development of our air communications.

The creation of the Ministry of Aviation for the National defense is bound to give a greater impulse to aviation, as this institution will unify the air navigation activities of the nation. It combines military, naval and civilian aviation under one authority. At present there is an impressive activity in the Ministry of Aviation—the whole Northeast and the Amazon Basin are being covered by commercial and military air lines and airports. Figures obviously are not available.

RAILROADS

The total merchandise transportation via Brazilian Railroads in 1939 reached 34,829,000 tons. Not included in this figure are the passengers, livestock, baggage and mail service. The above figure, if compared with the overseas and coastal navigation transportation figure, shows that the backbone of Brazilian transportation is the railroad. The description of Brazilian railroad development requires the examination of five different historical periods which are noted briefly from the viewpoint of importance to the railroad development policy.

First Period—1835—1879 (Empire)

Brazil was very poorly settled at the thirties of the last century. The population in 1830 is estimated at about 5,000,000 inhabitants. Therefore, the population

density was 1.6 per sq. inch which is an average figure. The concentration was, as it is still, much heavier in the cities and towns along the ocean-shore. Under the conditions, existing private capital could not take the risk of building and operating railroads. The government, if it intended to develop the country had to either build and operate the railroads or assist private initiative by granting financial and other assistance to private promoters.

The railroad was then just being initiated in England. It is an attestation to the Brazilian statesmen of that time that they, looking forward to the future, recognized the importance of the new means of transportation, still combatted and discussed in Europe, for the opening and development of the country. The first railway law was issued in 1835. However, no railroad could be installed under the directives of this law because in setting the conditions for concessions, no special attractions were included for private capital. The geographical and operational difficulties for railroads in Brazil are explained in the brief description I gave before on the relief of the country. Attempts to attract foreign capital were unsuccessful for almost twenty years.

The law of June 1852 offered the following advantages:

(1) Guarantee of 5% interest to invested capital.
(2) A privilege zone of five leagues on both sides of the right of way.
(3) Exemption of import duties for necessary materials for construction.

The first railroad built in Brazil started operation in 1854. It was constructed without guarantee of interest. It was 14 kilometers long and operated from Porto da Estrella, a village on the Rio de Janeiro Bay, to the foot of the mountains of Petropolis. The advantages of the concession still were not sufficient. Other countries offered better interest for capital investment. Therefore, several provinces, such as Pernambuco, Bahia, Rio de Janeiro and Sao Paulo, granted a supplementary interest of 2% from their budgets.

The year 1874 is chosen as a milestone, because after recovering from the depression consequent to the war against Paraguay, a new law was passed setting forth new conditions for the building of railroads.

During the period from 1854 to 1874 discussions took place between the Government and the Companies. The main dispute concerned the amounts credited to guaranteed capital investment. The secondary contention was that some of the companies, even with described guarantees, were unable to supply the capital necessary for the contracted obligations. The most interesting event in consequence of the origins and causes of the described disputes, was the taking over by the Government of the Estrada de Ferro D. Pedro II (line from Rio de Janeiro to Barra do Pirahy) which is now the Estrada de Ferro Central do Brazil, today the largest system in the country. This taking over sets up the future government policy for railroad development. The Company was then at the end of its financial resources. The Estrada de Ferro Central do Brazil is still government owned and operated.

Second Period 1874—1889 (Empire)

The policy followed in this period was similar to that outlined in the period before. The policy of guaranteed interest followed its course, successful for some enterprises, ruinous for others. The railroad system grew faster, for in many cases the Imperial and the Provincial Governments started building their own railroads when and where private ownership would not undertake the enterprises, and when and where the railroads were recognizd to be of outstanding importance in the development of the country.

Some of the railroads built in the first period were taken by the Government, and a large amount of those constructed in this second period followed this same destiny. The growing demands of the population were increasing the need for more railroads. The development of coffee culture, the most significant part of Brazil's economy, was partially responsible for these demands.

The most important change during the period was the increased number of railroads taken by the Government. The total extension constructed and opened to traffic from 1889 was 8300 kilometers, with an annual average of 553 kilometers. The contrast to the yearly average of the period before of 63 kilometers demonstrates the efforts of the Imperial Government to supply the country with the necessary transportation facilities.

1890—1914—First Period of the Republic

Before any other comment about the period, it may be interesting to point out that during the second period of the Empire, the exchange value of the milreis was practically stable. In 1889, the average value was 53.63 cents. Contracts made during the period of the Empire called for terms of payment in gold. The economic troubles following the liberation of slaves and consequent financial and political troubles during the first years of the republic resulted in a decrease of the exchange value of the milreis to 14.98 cents in 1898. At this time the amount necessary in additional milreis, due to the depreciation amounted to one-third of the budget. The result was the beginning of a new policy of taking over roads built under the guarantee of interest and the renting of the same to private companies for operation. Despite the difficult financial situation, the railroad net still increased. From 1890 to 1898, the average annual amount of railroads opened to traffic was 564 kilometers per annum as compared with the 553 of the period before.

In the year 1898 a refunding loan was obtained thus bringing the exchange up to 23.07 cents in 1901. The continuation of the "taking over" policy is marked with the recapture of 2148 kilometers, with interest payable in gold (1902) and a similar operation performed in 1905, which reduced the total extension having these guarantees down to the total of 903 kilometers. In 1900 the total length operated under guarantee of interest payable in gold was 3,110 kilometers.

The necessity for supplying the country with needed railroad lines, however, did not lead the government to completely abandon the policy of granting guarantees of

interest payable in gold. Therefore, in 1914 the total length operated under this burden was again 2,169 kilometers. The important developments of the renting policy was the law of 1903 authorizing the construction of new lines and connecting lines by the renting companies and further promoting the establishment of large systems composed of the small lines.

The four most important systems consolidated in 1941 were:

Great Western of Brazil R.R.	1976 kilometers
Comp. Ferroviaria Este Brasileira	1708 kilometers
Rede Sul Mineira	1249 kilometers
Viaco Ferrea do Rio Grande do Sul	2172 kilometers

The survival of these systems today proves the wisdom of the policy.

Due to legislative and constitutional technicalities and the difficulty of precise definition of the responsibility of the States, the first transportation plan organized by the decree of 1890 did not bear the necessary consequence of coordination for the development of railroad and other transportation for the country as a whole.

In 1914 the total roadbed reached 26,062 kilometers.

Second Period 1914—1930 (Republic)

The most characteristic change of the railroad policy during these years was the taking over by the Federal Government of the renting and operating companies. The predominant reason for this change was the difficult financial and economic condition which World War I brought to the country. Foreign capital was scarce. Rolling stock, permanent way material and locomotives reached enormous costs and were difficult to obtain, and yet the compensation of a fare increase would ruin the industry and agriculture of the country. This transfer of responsibility of running the railroads was a logical step, as the Republic had brought more power to the States, as against the Central Government. The Central Government carried the burden of building the railroads. In 1914 the States owned only 8% of the whole mileage of Brazil, while the Central Government owned 53%.

The economic progress of the States of Minas Geraes, Rio Grande do Sul and Sao Paulo, and their political preponderance in the Federation made it just that they should carry the burden of operating railroads whose financial conditions were not attractive for private capital. This policy of throwing the burden of operation over to the States showed its most important results in the readjustment of freight rates. The freight rates controlled by the Federal Government were all raised to a more remunerative level, which had been impossible heretofore.

Besides the shifting over of renting contracts to the States, the main policy of this second period was the beginning of a sound tariff.

Third Period (Republic) — From 1930

The third period of the Republic shows the benefits of the farsighted influence of President Vargas' rule.

His political and administrative genius reached down into the very roots of the evils of the continuous crisis of the entire Brazilian transportation system.

As the bulk of all railroad necessities, coal, cars, locomotives, all spare and repair parts, lubricants, rails and accessories, have been imported and as not only the transportation but also the whole Brazilian economy was depending upon imported manufactured and semi-manufactured products, first attention was given to the national coal and oil extraction and immediately thereafter to the installation of a national heavy steel industry.

COAL

In 1940 the total consumption of coal in the country was estimated at 2,000,000 tons. The consumption of the railroads alone amounted to 1,200,000 tons, i.e., 60% of the total. By means of adequate legislation, obligatory consumption, financial help to the domestic coal mines and more adequate transportation, the use of domestic coal increased 135% between 1930 and 1935 and is still increasing.

The former state of indecision existing between government and private operation has ceased. The Brazilian Federal Government has indefinitely decided to operate railroads whose operation is undesirable for private enterprise and where national interest requires such action. Most perfect understanding between States and Central Government and a better sense of cooperation permits the shifting to State operation, if local interest prevails.

FEDERAL RAILROAD AUTONOMOUS OPERATION

Discussions and disputes about the ability of the Government as a railroad owner and operator are as old in the country as the railroads—almost a century. Ruinous government operation has always been alleged, principally after every seizure of a private line. However, there were failures of private operation even through such zones as the coffee area of the State of Sao Paulo. Typical examples are the Sorocabana Railway and the Araraquara Railway. Government operation had been principally condemned due to overstaffing. The truth is that excessively detailed budget appropriation legislation conspired to enlarge the personnel and retaining on their jobs a large percentage of retirement-age men. Also the purchase of materials always depended on the very intricate government bureaucracy.

Labor legislation and social security were the objects of several advanced laws since 1937, and Brazilian labor as a whole, consequently railroad labor too, is now enjoying these privileges, as well as the railroads, for the retirement and pension institutions have independent budgets. The Brazilian Civil Service Department was created in 1938 and controls all public services, their economy and efficiency, their organization and the budget grants. However, the most outstanding action, from the viewpoint of Railroad operation, is the creation of autonomous railroad administrations.

Four large and small Federal Government railroads now enjoy the business-like autonomy and independence from excessively detailed government budgets.

(*Continued on page* 25)

Submitted as:

ITEMS OF GENERAL INTEREST

NOMINATING COMMITTEE
Desires Recommendations

The constitution of N.S.P.E. requires that the Committee on Nominations shall be chosen a year in advance of the election of officers.

In order that States may be advised of the time conditions involved, Secretary Larson has prepared the following communication which, while addressed to the Committee, is intended for all members of the Society.

June 2, 1943

"N.S.P.E. NOMINATING COMMITTEE

Engr. John C. Riedel, *Chairman*
505 Macon Street, Brooklyn, N. Y.

Engr. John D. Miller
108 East 10th Street, Austin, Texas

Engr. John S. Kennedy
893 Sladelman Avenue, Akron, Ohio

Engr. Ralph E. Simpson
237 Ridge Road, Indianapolis, Ind.

Engr. Alex Van Praag
447 Standard Office Building, Decatur, Ill.

'Gentlemen:

In pursuance of your election, at the Eighth Annual Meeting, October 31, 1942, as the Committee which will make the nominations of candidates for officers, to serve during the year 1944, we call your attention to certain parts of the National Constitution now in force, mimeographed copy of which is enclosed herewith.

"Nominations must be made to fill the office of the President, four Vice-Presidents, and a Treasurer, in accordance with Article V. All nominations made by the Committee must be ratified by the State Executive Board of the State Society of which the nominee is a member (see Article VII). Also, please note that additional nominations may be made by petition of the membership.

"For your information we quote part 16 from the minutes of the Meeting of the Board of Directors held December 12, 1943.

> '16. Consideration of Establishing Boundaries of four areas in accordance with Article V of N.S.P.E. Constitution:
>
> Motion by Treasurer Simpson seconded by Director C. W. Burke was carried that to satisfy the requirements of Article V of N.S.P.E. Constitution the following Zones be established:

Northeastern Zone to cover—Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, Pennsylvania, New Jersey, Delaware, Maryland, District of Columbia, Virginia, West Virginia.

Southern Zone to cover—North Carolina, South Carolina, Georgia, Florida, Alabama, Tennessee, Mississippi, Arkansas, Louisiana, Oklahoma, Texas and Puerto Rico.

Central Zone to cover—Ohio, Kentucky, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Missouri, Kansas, Nebraska, South Dakota, North Dakota.

Western Zone to cover—Montana, Wyoming, Colorado, New Mexico, Arizona, Utah, Idaho, Washington, Oregon, Nevada, California, Alaska and Hawaii.'

The following time schedule must be adhered to in order to satisfy all of the requirements set forth:

Aug. 1. Ratification of nominees by respective member State Societies must be in hands of Nominating Committee.

Aug. 15. Dead line for filing Nominating Committee report with Editor of American Engineer and National Headquarters.

Aug. 29. American Engineer mailing date.

Oct. 25. Mailing date for ballots.

Dec. 1. Balloting closes.

Dec. 11. Tellers Committee report to Board of Directors."

Yours truly,

/s/ Edward Larson
Executive Secretary"

CONSTITUTION OF N.S.P.E.

REPRODUCED FOR BENEFIT OF MEMBERSHIP AND STATE SOCIETIES WHEREVER ORGANIZATION AND AFFILIATION ARE PENDING

State Constitution Should Conform To Basic Principles

(As Amended March 1, 1942)

Constant requests for copies of the Constitution of the National Society make it desirable to reprint the same in bulk. It is suggested that copies of this issue of the American Engineer be kept available by officers and directors and members of National, State and Chapter organizations of Professional Engineers. State Societies should review other contstitutions with a view to harmonizing same with that of N.S.P.E.

CONSTITUTION OF THE NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

(As Amended March 1, 1942)

PREAMBLE

The National Society of Professional Engineers, recognizing that service to Society, to State, and to Profession is the premise upon which individual opportunity must be builded does hereby dedicate itself, as an educational institution to the promotion and protection of the Profession of engineering as a social and economic influence vital to the affairs of men and of the United States.

ARTICLE I—OBJECTS

The objects of the Society shall be the advancement of the public welfare and the promotion of the professional, social and economic interests of the engineer by means of education, legislation, public relations, the establishment and maintenance of high ethical standards and practices through the development of a civic consciousness and the formation of State Professional Engineering Societies and chapters thereof throughout the United States.

ARTICLE II—HEADQUARTERS

The main offices of this Society shall be located at Washington, D. C., or such other place as may be designated by the Board of Directors.

ARTICLE III—MEMBERSHIP

Membership shall consist of Professional Engineers. A Professional Engineer shall be defined as follows:

(a) A person licensed to practice professional engineering in any or all of its branches in accordance with the laws of the state in which such person resides or practices.

(b) A person licensed to practice professional engineering in any or all of its branches in another state.

(c) A person certified by the National Council of State Boards of Engineering Examiners.

(d) A person certified by the Board of Directors of a constituent or cooperating State Society as being possessed of qualifications equivalent to those set forth in (a), (b), or (c).

Two years after the enactment of legislation requiring registration of professional engineers in any state, no person in such state shall be eligible for membership in the National Society, unless licensed to practice in accordance with the laws of that State. Sections (b), (c), and (d) will no longer be operative in such state.

No person residing or practicing in a state where a member society exists may obtain or retain membership in the National Society except through membership in such State Society.

ARTICLE IV—MEMBER STATE SOCIETIES

One organization, approved by the Board of Directors of the National Society, may be recognized in each state as a member society upon written acceptance of the provisions of this Constitution. A minimum of ten professional engineers shall be required for the formation and chartering of a Member State Society. Societies affiliated with the National Body shall be limited to organizations, the majority of whose membership are recognized professional engineers. Two years from the date of the adoption of this Constitution eligibility for and retention of National affiliation of a State Society will require that every professional engineer member of such State Society must thereby become a member of the National Society.

ARTICLE V—OFFICERS

The officers of the Society shall be a President, four (4) Vice-Presidents, one chosen from each of the major areas of the United States as determined by the Board of Directors, a Treasurer, and an Executive Secretary who shall be appointed annually by the Board of Directors. The officers and directors shall take office on January 1st next following their election and shall hold office until the following January 1st or until their successors have been duly elected and qualified.

ARTICLE VI—BOARD OF DIRECTORS

1—The Board of Directors shall consist of the Officers of the National Society, except the Executive Secretary; the two (2) immediate Past Presidents, and the Directors from each member State Society, who shall be named by the said State Society. Each Member State Society shall have one (1) Director for the first five hundred (500) or fraction thereof members in good standing, and one (1) additional Director for each additional five hundred (500) or fraction thereof members in good standing. Directors from State Societies may be represented by alternate. The Board of Directors shall determine questions of policy and shall meet on the call of the President or of a quorum of the Board.

2—One-third of the total number of members of the Board of Directors shall constitute a quorum. If a quorum should be lacking at any meeting the Board may be canvassed by letter ballot and a majority of the votes cast shall prevail.

ARTICLE VII—NOMINATIONS

Nominations for officers shall be made by a Committee of five (5) consisting of Chairman and four members, who shall be nominated and elected from the floor at the Annual Convention of each year, to serve for the following Calendar year. No officers shall be eligible for membership on this Committee and the Committee shall not nominate one of its members for an officer. The Nominating Committee must secure the ratification of each nominee from the State Executive Board of the State Society of which the nominee is a member. Additional nominations shall be placed on the official ballot upon petition of fifty members, all of whom must be in good standing, if received at least one week prior to the printing of the official ballot.

ARTICLE VIII—ELECTIONS

Elections of officers (except the Executive Secretary) shall be made annually by plurality vote on individual letter ballots sent to all members in good standing of the National Society.

ARTICLES IX—COMMITTEES

The Standing Committees of the National Society shall be:

Legislative	Educational
Public Relations	Publication
Professional Relations	Membership

Such other committees as may be desirable shall be appointed by the President and shall perform such duties as may be assigned by him.

ARTICLE X—CONVENTIONS

A convention shall be held annually at such time and place as may be selected by the Board of Directors.

ARTICLE XI—VOTING REPRESENTATION AT MEETINGS

Voting at meetings of the National Society shall be limited to duly accredited representatives from each of the Member State Societies. The basis of voting representation for each Member State Society shall be on the basis of one vote for each 200 members, or fraction thereof, in good standing. The election or appointment of voting delegates from a Member State Society shall be as determined by said Member State Society. Each voting delegate shall present to the Executive Secretary at a specified time before each meeting of the National Society, his credentials for inspection and approval. Member State Societies may at their discretion, authorize one or more of their members to cast all or part of the votes to which the Member State Society is entitled. Voting delegates, however, must be members of the respective Member State Societies for whom they are authorized to vote.

ARTICLE XII—DUES

The dues for membership in the National Society shall be $4.00 per year, which shall include the cost of the subscription to "The American Engineer". These dues shall become due and payable on January 1 of each year. The dues shall be collected by the Member State Societies and shall be payable monthly to the National Society. For Registered Professional Engineers who are not members of State Societies and who reside in states where such societies have not been established, the dues shall be ten ($10) dollars per annum, payable direct to the National Society.

ARTICLE XIII—STATE AUTONOMY

In all matters of State or local concern, the Member State Societies shall have full autonomy, but may call upon the National Society for advice, counsel and assistance. The National Society may recommend State Legislation and procedure in the interests of uniformity and efficiency, but action upon these recommendations shall be determined by the member State Society.

ARTICLE XIV—AMENDMENTS

Section 1. Amendments to this Constitution may be proposed by:

(a) A majority vote of the Board of Directors

(b) Any Member State Society

(c) A petition signed by not less than 15% of the voting members in good standing of the National Society.

Section 2. Proposed amendments shall be mailed by the Secretary to each member in good standing, together with a letter ballot, not less than thirty days prior to the regular or special meeting at which the vote is to be canvassed.

Section 3. An amendment shall become effective only upon receiving affirmative votes of two-thirds of the votes cast by members entitled to vote, provided that not less than twenty per cent of the members so entitled to vote cast affirmative ballots.

THE PURPOSE OF N.S.P.E.

OUTLINED BY J. H. MORGAN
Former Vice President

In an article recently prepared for the Illinois Engineer by Vice President Morgan of the Illinois Society and former Vice President of the National Society, the writer sets forth an interesting commentary on the background and purposes of N.S.P.E.

"You remember the old proverb, 'A jack of all trades is master of none,' which was intended to express the principle that to spread one's activities over too wide a field is conducive to failure. You also remember the proverb, 'One cannot serve two masters, etc.,' which expresses the principle that dividing interests or aims leads to slighting all but one.

"For many years engineers have been creating new engineering societies to meet special interests as they felt the need for such an organization. When each of these has been designed for a single purpose and placed in competent hands, the society has justified its being. If it has been given more than one purpose, it has invariably fallen down in varying degrees in all but one activity.

"Over the last century, engineers specialized and sub-divided themselves into technical groups to such an extent that there was no satisfactory organization through which they could express themselves upon those subjects which were common to all engineers. Previous to the great depression, the need for such an organization apart from the activities of technical societies was not generally recognized among successful engineers. Those who were still struggling upward felt such a need so that when toward the close of the first world war, the first organization, intended to solely look after the economics and public relations of the engineering profession, appeared. It grew by leaps and bounds and in a very short time was the largest society of engineers in existence. It did a lot of good but failed in its main purpose for two reasons: It tried to cover too wide a field in one operation by taking in everybody that aspired to be called an engineer; and it did not insure that the control of the society would be held by licensed professional engineers. Most of the engineers who flocked to it were disappointed in it and the society dwindled about as fast as it had grown.

"When the N.R.A. was being formulated in Congress, the professional engineers were largely ignored and threatened with being legally classified with skilled labor. Groups of professional engineers went to Washington to protest and assist in making proper provisions for professional engineers. They represented special groups of engineers, either individual state societies or national societies of special branches of engineers. They got a rude shock. They were told bluntly that they did not represent professional engineers as a whole. It was even suggested that they go home and organize under the protective wing of the American Federation of Labor or the C. I. O. so that they would have a large mass of political votes behind them. The politicians did not recognize that professionalism and unionism are incompatible.

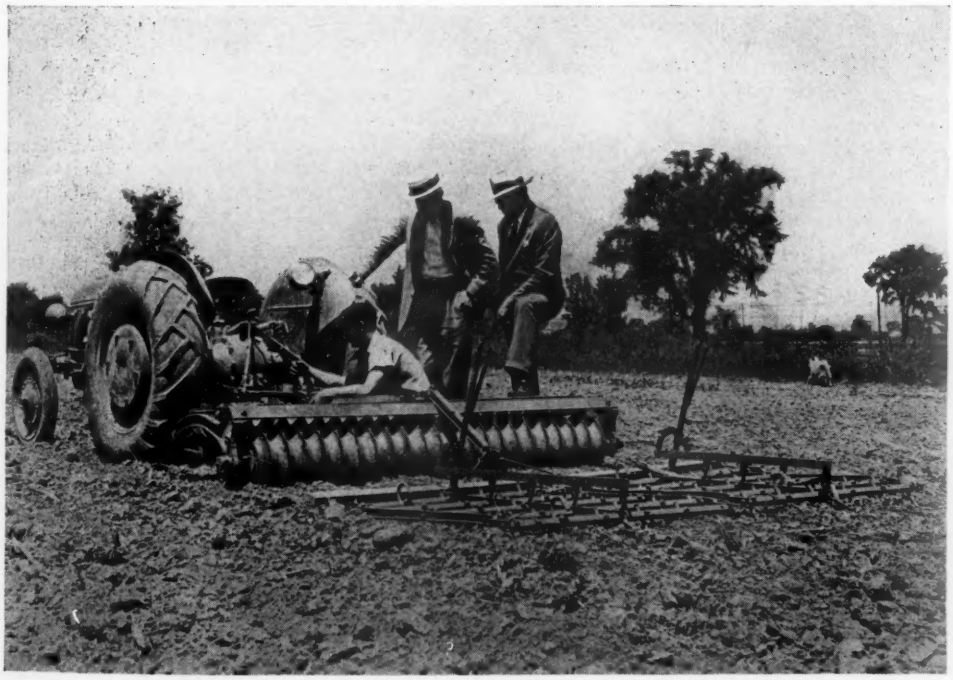
"The outcome of this shock was that a few state societies of professional engineers got together and organized the National Society of Professional Engineers as a congress of state societies with the sole purpose of looking after the economic and public relations side of professional engineers and excluding from its deliberations engineering technique. To get the interest and support of engineers it made membership a personal matter but to obtain the right setup to handle state and Federal legislations, it functions through autonomous state societies. It encourages the state societies to establish chapters by political sub-divisions so that the organization parallels the representative form of our government.

"In Ohio a few years ago, when the Ohio Society of Professional Engineers could not get proper consideration from the politicians in power, they entered a political campaign and elected men who would cooperate.

"The National Society of Professional Engineers has grown steadily from the start, not a mushroom growth, but a healthy growth which promises to make it what it was intended to be. I believe it is constructed right for the job."

ENGINEER TO FARMER

The Use of Highway Equipment Helps Farmers to Contend Against Adverse Weather, Absence of Equipment and Lack of Labor.



State Highway Director H. G. Sours, *Past President of the Ohio Society of Professional Engineers;* J. P. Shumaker, *Division Chief Engineer* and Mechanic Wilbur Wolf bring aid to the stricken Ohio farmer.

Ohio's huge food basket is certain to be filled to overflowing this year because Engineers of the State Department of Highways went to the rescue of sorely-pressed farmers by turning road-building tractors into plowing and harrowing equipment, manned with competent operators.

This is a suggestion that might well be followed by all other states and indicates the scope of the Engineer's usefulness.

Fragments from

STATE & SOCIETY ACTIVITIES

MINNESOTA

Prepares For Induction

July 9th is the date set for the ceremonies incident to the formal presentation of a Charter to the Minnesota Association of Professional Engineers. Professor Nold of Ohio State University, Vice-President of the National Society of Professional Engineers, will deliver the principal address. Other speakers include President Ray Herrmann of the Minnesota Association, Edward Larson, Secretary of N.S.P.E. and Walter H. Wheeler, National Director from Minnesota.

An auspicious occasion is envisioned and a report of the same will be eagerly awaited by other State Societies.

Professional Society Active

Through the collaboration of National Director Walter H. Wheeler of Minneapolis, Minnesota and the courtesy of the Bulletin of the Minnesota Federation of Engineering Societies, the American Engineer has received a copy of a recent message by President R. R. Herrmann of the Minnesota Association of Professional Engineers, together with some comments on Minnesota legislation.

In his message which he introduces with the following quotation from Marcus Aurelius Antoninus, "Nothing has such power to broaden the mind as the ability to investigate systematically and truly all that comes under thy observation in life," President Herrmann states:

"If ever there was a time when we should investigate systematically all that comes under our observation, it is now. Each activity and each trend must be examined with a critical eye to note its effect on the future of this country and also on our profession.

"Engineers in general have been individualists and have believed in the spirit of free enterprise permitting competition to operate for the best of all. Is the trend of restrictive legislation going to continue to the point where free enterprise will be stifled and the incentive for individuals to forge ahead will be dulled? To assist one group by subsidies and lower taxes at the expense of others may be a worthy enterprise but when it is carried to the point where it means a stifling of initiative by discouraging those who have the will to forge ahead, we question the wisdom of such procedure in the long run. This subject deserves investigation by engineers especially.

"What will be the results of reciprocal trade treaties? Will they result in a greater demand for manufactured products thus requiring more engineers to design and manufacture them? Or, will cheaper products invade our shores and cause less need for our professional services? Will American industry be able to compete with foreigners and continue to pay the same wages as in the past? Can engineers offer any assistance in answering this problem?

"Has the engineering profession received its share of governmental appointments, especially to those offices where the duties require engineering knowledge and experience? If not, perhaps it is because the engineers have not assumed their share of voluntary civic responsibilities. Why not give some thought to this question.

"Is the high standard of living in this country due to plentiful resources or to enterprising individuals? The original natives occupied this continent for hundreds of years, probably froze while sleeping over coal deposits, hungered while living on good tillable land, used sharp stones for knives while skinning a deer in the neighborhood of the Mesaba Iron Range, etc. Perhaps some of the 'have-not' countries need the help of some resourceful American engineers."

Executive Secretary Beaubien in reporting on the recent efforts of the Professional Engineers and Architects to improve and strengthen the present Registration Act advises that:

> "Most of the work was in connection with our ill-starred efforts to have some improvements incorporated in the registration act. After these proposed changes had crystallized from conferences among MAPE registration committee members, representatives of the architects and members of the Board, a bill incorporating these proposals was presented to the Legislature. * * *
>
> "Although the bill received 55 votes to 52 against it, 11 more were needed to be a majority of the House. An effort to place the House under call to compel absent members to return and vote failed, and so did the bill.
>
> "With the experience gained from this journey across the burning sands of the Legislature, the profession should be in a position to determine better what it can expect two years hence, and how to better and more adequately meet the situation."

Missouri Society Seeks Cooperation

In a recent editorial the Missouri Engineer, Official Publication of the Missouri Society of Professional Engineers, calls for greater collaboration between the Board of Registration and the profession, especially in matters of legislation and in the administration and enforcement of the law regulating the practice of engineering.

The editorial is reproduced herewith:

"Our Registration Board

"Advancement of the profession through the registration of professional engineers has long been the concern of the Missouri Society of Professional Engineers. We now have a registration law but we are still interested in the whole subject of registration. We also feel that the aims of the Society and the Registration Board should be one and the same.

"After nearly a year and a half since the Registration Board was appointed, it is logical to reflect on what we have. In the first place, the Registration Board has operated under considerable handicap because of a mix-up on funds.

"A number of things in connection with the Registration Board, have been brought to the attention of the Society. Some, we think, are of interest to the profession. In the minds of some, it is felt that the Board has not taken full advantage of the opportunities presented to it to maintain contact with the profession. The Missouri Society of Professional Engineers is, apparently, the largest professional engineering organization and most representative of the engineering profession. Some feel that it would be logical for the Board to keep in contact with the profession through the Society and its paper, the Missouri Engineer. The Board has been invited to do so.

"For some time the Board has been without the benefit of an engineer (or architect) for Secretary-Treasurer. This is contrary, we believe, to the intent of the law. In the pamphlet issued by the Registration Board, there is a statement that: 'The office of the Board has been established and is maintained in Jefferson City,

as the law requires, where the Secretary-Treasurer and other employees of the Board, under *his* direction, will conduct the business and execute the orders of the Board *and be ready at all times to cooperate with the members of the professions concerned and the public in the administration of the Registration Law.*' If the Secretary is to cooperate with the profession, we believe that a member of the profession is essential as Secretary-Treasurer in order to fully understand the problems. If the Secretary were one of the profession, he naturally would be interested in seeing the profession improved, and its interests protected.

"The rules of the Registration Board state that 'the Secretary Treasurer shall, under the direction of the Professional Engineering Division and subject to the Chairman of the Board, make all necessary arrangements including the compilation of such questions as may be required for examinations to be conducted by said Division.' Certainly a non-technical person would have great difficulty in choosing suitable questions for an examination of professional men.

"We feel that an engineer or architect should be placed in the responsible position of Secretary-Treasurer, particularly in these times when the engineers and members of the Board are engaged in war work and do not have unlimited time to devote to the direction of the office.

"In the current legislative session, a bill was introduced affecting the registration law. The bill proposes that architects and professional engineers who are prevented under the grandfather section (Sec. 16), from applying for a license because of service with the Armed Forces be allowed to do so one year after the war. The bill was perfected in the House of Representatives before any word reached the ears of the Missouri Society. This lack of watchfulness on our part is serious and steps have been taken to prevent any further occurrence of it. Whether the bill is detrimental or beneficial is not the question. Presumably, members of the Registration Board were aware of its existence and failed to inform us of the fact. The Acting Secretary of the Registration Board shared with us in this blissful ignorance. In all matters of this kind the Registration Board and the Missouri Society of Professional Engineers should work in unison. Both are interested primarily in the advancement of the profession and its individual members, and should cooperate completely to protect the interests they represent.

"The registration law provides for the licensing of non-graduate engineers upon the applicant's record of experience and passing an examination. Such an examination shall be held at the Board's pleasure. The rules promulgated by the Board state the date of the regular annual examination is the first Monday in October of each year, and provide for other than regular annual examinations. Several engineers who had applied for license under Article B, Section 11, prior to the first Monday in October, 1942, have complained that they have not been called for examination to date, and so far as we can determine no examinations have been held.

"One instance has come to our attention where an engineer asking for a classification requiring an examination was given a license under the grandfather clause, (Sec. 16). Others have been deprived of their license awaiting the pleasure of the Board. It appears to us that at least until the majority of the engineers of the State are registered, the Board should manifest full cooperation and interest in the persons desiring to be registered and to hold examinations frequently.

"What about the Certificates of Registration? The law requires that a Certificate of Registration be issued. The card we have received is for identification purposes only. Some feel that the Board should by this time have that matter ironed out.

"This is a composite view of numerous members of the Missouri Society of Professional Engineers. This editorial is advanced in an atmosphere of constructive criticism, and the Society stands ready to cooperate wth the Registration Board. Full cooperation of the Society and the Registration Board, it is felt, is imperative and we solicit an opinion of the Board on this important consideration."

NEW YORK

Bronx Chapter

The June 3rd meeting of the Bronx County Chapter was the last before the summer recess. Most of the evening was devoted to a discussion of the report of the Committee on Legislation presented by Chairman Edward Fitzpatrick.

The Chapter disapproved of a proposal to incorporate specific sanction of the use of the term Engineer by four groups of skilled craftsmen in the act regulating the practice of professional engineering. After discussion, the following resolution was unanimously adopted:

> "It is the consensus of the Bronx Chapter: that the Engineering Profession has neither the legal nor moral right to legislate for or against other groups; that the Society should sponsor no legislation which specifically designates any calling other than Professional Engineering, and, that a copy of this action by the Chapter should be presented to the Directors of the New York State Society of Professional Engineers."

A committee composed of Engineers Polls, Hogan and Young was appointed to revise the Chapter constitution to conform with that of the State Society.

President Solon E. Friedeberg announced the admission of Engineers John J. Hogan, Andrew DeFiore and Bernard A. McEntegart to membership.

Onondaga Chapter

Onondaga County members have gone all-out in their membership drive. Eight new members have recently been obtained, with more in prospect. Each member is aiding personally in the drive by selecting his own prospects.

A committee consisting of Engineers F. Kavanaugh, C. Keating, L. West and E. Dollard was appointed by President Post to bring the Chapter Constitution into conformance with the State instrument.

Erie Chapter

The first issue of the Erie County Chapter Bulletin was heartily commended at the May 26th meeting. Engineers H. S. Snyder and M. D. McDonald are Editor and Assistant Editor respectively. Chapter members are invited to make contributions to the Bulletin, which will be published monthly. It has the commendable purpose of keeping chapter members advised of matters pertaining both to the profession in general and to the local chapter in particular. The Bulletin discusses City Planning, Civilian Defense, Engineer Absenteeism and Plastics and lists the officers of the Chapter.

The officers of the Chapter re-elected for 1943 are:

President	Edward J. Nunan
Vice-President	Norris C. Barnard
Secretary	John J. Landers
Treasurer	Arthur B. Weaver

Directors elected for 1943 are:

Director (3 years)	Edward R. Coon
Director (3 years)	Carlos E. Harrington
Director (2 years)	Richard C. Wohler

The speaker, Mr. Donald M. Shanafelt, Metallurgist of the Bethlehem Steel Co., presented a sound movie entitled "How Steel is Made," and commented to an interested audience on steel alloys, conditioning of air to increase output of furnaces and the use of old alloy deposits.

Rensselaer County

Secretary C. J. Sullivan sends word that the May meeting of Rensselaer County Society of Professional Engineers was held at the Hendrick Hudson Hotel. Richard Hickox, District Traffic Superintendent of the New York Telephone Company, was the speaker of the evening and gave the members an intersting talk on Switchboards.

Westchester County

Engineer Charles H. Sells, one of the charter members of the Westchester Chapter, brings distinction to the unit through his appointment by Governor Dewey to the position of State Superintendent of Public Works. Engineer Sells, who is both popular and highly regarded, recently completed supervision of a large war construction project in Iran.

New officers for the year 1943 are as follows:

President ..... A. M. Anderson
Vice-President ..... J. C. Harding
Secretary ..... Wm. L. Wenzel
Treasurer ..... Paul I. Brienza

Herewith listed is the Honor Roll of Westchester County Chapter as set forth in the June issue of Chapter news:

Honor Roll

Lieutenant Colonel James R. Rundell, APO 834, c/o Postmaster, New Orleans, Louisiana.

Lieutenant Commander Arthur Benline, 70th Battalion, Fleet P. O., New York.

Lieutenant Commander Raymond S. DeMott, USNR, c/o home, — Alger Court. Bronxville.

Lieutenant Commander Allyn R. Jennings, U. S. Coast Guard, Port of N. Y.

Major Claude A. Latimer, Engineer Corp., Governors Island, New York.

Major Francis J. Laverty, No. 356 Base Headquarters, Army Air Base, Topeka, Kansas.

Lieutenant Hans E. Frommholz, USNR, 36th Battalion, Fleet P. O. 8190, San Francisco, California.

Lieutenant Melville K. Gill, USNCTC, NOB, Camp Allen, B.O.Q. 39, Norfolk, Virginia.

Lieutenant Norman S. Odell, USNR, 1627 Kennedy Place, N/W, Washington, D. C.

Lieutenant Jerome N. Lawlor, USNR, NOB Argentia, Newfoundland.

Lieutenant Hollis A. Swazey, USNR, Naval Training School (Radar), Austin Hall, Harvard University, Cambridge, Mass.

Kings County

Education for Engineering, its effect now and after the war, is a topic of vital and growing concern to the Engineer. Lately, there has been considerable discussion on this matter in engineering publications and organization meetings. As the American Engineer goes to press, the Kings County Chapter of New York State Society plans to hold a discussion of this subject at its next meeting. Dr. Jay F. Krakauer, a Chapter member, will lead the discussion, centering around "New Trends in Engineering Education and their effect on the Post War Status of the Engineer."

State Board Of Examiners For P. E.

Annual Report

In accordance with the provisions of legislation enacted at the 1943 session of the Legislature and approved by the Governor, the fiscal year now starts on April 1 rather than July 1. This report, therefore, covers the nine months from July 1, 1942 to March 31, 1943. During this period the Board held 8 meetings and considered 461 applications for licenses, of which 53 were rejected, 234 held for written examinations, 44 held for further consideration and 130 recommended for licenses. The total number of applications considered (461) include all new applications and those previously acted on and reconsidered one or more times at request of applicants. The results of the June 1942 examinations were not available for inclusion in last year's report. At this examination 110 applicants appeared and of these 56 passed, 36 were conditioned in one subject and 18 failed. The results of the January 1943 examinations are not as yet available and will be shown in next year's report.

During the period covered by this report no charges were filed with the Board seeking the revocation of any license.

Ten applications filed with the National Bureau of Engineering Registration for Certificates of Qualification were considered and of these nine were recommended for registration and certification and one conditionally recommended.

The divided examination plan which has been under consideration for some time has been put in effect. The first preliminary examinations will be given in June 1943. Under this plan candidates who have been graduated from approved engineering schools or who have otherwise met the educational or specified alternative requirements are permitted to take preliminary written examinations in engineering fundamentals at any time subsequent to the fulfillment of such requirements, postponing final examination to the practice of professional engineering to the completion of the required experience period. Candidates passing the preliminary examinations will be enrolled as engineers-in-training.

The only legislation enacted at the 1943 session of the Legislature relating to the engineers licensing law provides for biennial instead of annual registration of licensed professional engineers and land surveyors.

The personnel of the Board as of March 31, 1943 is as follows:

David B. Steinman, chairman

Virgil M. Palmer, vice-chairman	Erich Hausmann
Roy G. Finch, secretary	Norman R. Gibson

May Meeting Of Board

The 236th meeting of the New York State Board of Examiners for Professional Engineers was held at New York City on May 21, 1943.

Of a total of 109 applications considered at this meeting, 5 were rejected, 20 were held for further consideration, 16 were admitted to the *preliminary* examinations, 44 were admitted to the complete examinations, and 24 were approved for license.

Examinations For P. E.

The results of the last two written examinations (June 1942 and January 1943) were as follows:

Total Candidates	*Candidates*	*% Passed* *Passed*	*Number*
(taking the complete examinations)	155	82	53
Graduates	128	77	60
Fractional College Credit	19	4	21
No College Credit	8	1	12
E.E. Graduates	27	18	67
M.E. Graduates	35	23	66
Chem. E. Graduates	11	7	64
C.E. Graduates	55	29	53

The 128 graduates who took the complete examinations represented 39 colleges or schools of engineering. Fifteen of these colleges (including one with 11 candidates) show a score of 100% of their graduates passing, 6 colleges show scores ranging from 90% down to 60%, 6 colleges show scores ranging from 50% down to 40%, and 10 colleges (including one with 5 candidates) show scores of *zero* percent passing. In fairness to the respective schools, the individual scores will not be released until a larger statistical base is accumulated.

NORTH DAKOTA

1943 Session Of The State Legislature Enacts Registration Law

At its recent session the North Dakota Legislature approved a Registration Act which parallels the Model Law. Only two states, Montana and New Hampshire, are now without Engineering Registration Acts.

OHIO

ADOPTS SLOGAN:

BEAT NEW YORK IN 1943 is the caption which appears in large red letters on the stationery of the Ohio Society. This is a challenge to Ohio as well as New York.

The June news letter and bulletin arrived several days late for inclusion in this issue.

TOLEDO REVISES CONSTITUTION

Toledo Chapter of the Ohio Society, has submitted to its members a new constitution amended to conform to the Constitution of the Society. The Preamble and Objects of the instrument are:

PREAMBLE

Recognizing that service to Society, to State, and to Profession is the premise upon which individual opportunity must be built, the Toledo Chapter of the Ohio Society of Professional Engineers does herewith dedicate itself to the promotion and protection of the Professions of Engineering and Surveying as a social and economic influence vital to the affairs of men and to the community.

ARTICLE II—OBJECTS

The objects of this Chapter are to represent the body of Professional Engineers and Surveyors in all branches of the Profession with a view to promoting the public interest as affected by the service of the Engineer and Surveyor, and safeguarding and strengthening the professional body for this purpose; to advance the professional and economic interest of the Engineer and Surveyor through legislation, care of public relations, maintenance of the integrity of professional practice, and mutual aid and support; to cultivate fraternal feeling and cooperation among the members of the Professions; to secure among them intelligent unity and harmony of action; to cooperate with other local, state and national engineering organizations; and to affiliate with the Ohio and National Societies of Professional Engineers.

AN EVENTFUL OCCASION FOR OHIO ENGINEERS

Governor John W. Bricker signing the Jones-Marshall Act (Senate Bill No. 37), revising the professional engineers and surveyors registration law of Ohio on May 7, 1943, in the prescence of a group of interested members of the Ohio Society of Professional Engineers.

Standing—Left to Right: Edwin H. Fox, *Vice President of the Ohio Society;* Lloyd A. Chacey, *President of Franklin County Chapter;* Thomas J. Smull, *Trustee of the Ohio Northern Chapter;* J. S. Kennedy, *Immediate Past President of the Ohio Society;* Walter W. Graf, *President of the Ohio Society;* George B. Marshall, *Member of the State Legislature, co-author of bill;* Harry E. Nold, *Vice President National Society Professional Engineers;* Robert N. Waid, *Chairman Legislative Committee of the Ohio Society;* Perry T. Ford, *Former President National Society of Professional Engineers;* Governor John W. Bricker seated at his desk.

FRANKLIN COUNTY

From President Lloyd A. Chacey of the Franklin County Chapter comes the following:

"Engineer Arthur V. Sheridan "June 10, 1943
New York, N. Y.

Dear Sir:

"Enclosed you will find a copy of the last issue of our 'Columbus Engineer'. This is being sent to all the registered engineers in the Chapter. We are also sending copies to the industries and employment groups for distribution to non-registered men. That will explain why we are stressing membership in this issue.

"Enclosed also you will find a copy of the Ohio Society publication on 'The Professional Engineer and his Organization'. I am proud to say that our chapter got out this publication earlier this year. We have also distributed this publication to all registered and non-registered engineers in the county.

"I personally feel that the American Engineer is exerting a great influence these days. It leaves the matters of local interest for our local publications and leads the way to a worthwhile professional movement in the nation. We must move to a place of more influence and that influence must be toward more cooperation and less selfishness in the world if we are to be worthy of the leadership that is ours."

Sincerely yours, /s/ Lloyd A. Chacey

The June 1st issue of the "Columbus Engineer" official publication of the Franklin County Chapter and the first to come to the attention of the American Engineer is a most presentable bulletin containing comments on the New Ohio Registration Act, Membership, Engineers-in-Training, Aeronautical Engineers and other items of interest. A photograph of Governor Bricker signing the Senate Bill No. 37 heads the bulletin which lists Frank W. Shelton as Editor and 903 State Office Bldg., Columbus, as the address.

The next regular meeting of the Franklin Chapter will take place in September. A special meeting will be held, at the call of the President, during July.

PENNSYLVANIA

Registers 45 New Candidates

At the Spring meeting of the Pennsylvania Board, the following persons were granted registration as Professional Engineers. In order that the Chapters may seek out these new registrants, the Pennsylvania Society has broken down the list and forwarded the same with the appeal to "Please contact the Engineers in your area and endeavor to have them join your Chapter."

Allegheny County

Davis, David H.—29 Catalpa Place (16), Pittsburgh—6148
Kazorski, Stanley Kay—5220 Columbo St., Pittsburgh—6140
Kelmar, John Joseph—125 Erwin St., Duquesne—6114
Kinney, S. P.—233 Oliver Ave., Pittsburgh—6144
McNinch, Arthur E.—Hazelwood Ave. No. 158, Pittsburgh—6124
Story, John Wilson—463 Marietta Place, Mt. Lebanon—6131
Morton, W. A.—1320 Fulton Bldg., Pittsburgh—6115
Wahrenburg, Lester E. F.—632 Oliver Bldg., Pittsburgh—6126
Walker, William Sefton—3514 Shadeland Ave., Pittsburgh—6133
Whitney, R. C.—1320 Fulton Bldg., Pittsburgh—6116

Beaver County

Baker, Michael Jr.—Baker Bldg., 115 Shields St., Rochester—4690
John, Robert L.—8 Clyff Lane, P. O. Box 3, Beaver—6135

Berks County

Stoudt, T. Glenwood—713 Wayne Ave., West Reading—6105

Bucks County

Huf, Harry F.—Slack Road, Ivyland P. O., Pa.—6149

Cambria County

Pattison, Donald R.—223 Boyer St., Johnstown—6147

Clinton County

Kronowitt, Philip—c/o American Aniline Products, Inc., Mt. Vernon St., Lock Haven (Member Harrisburg Chapter—6143)

Crawford County

Wilburn, Joseph G.—662 Hickory St., Meadville—6137

Cumberland County

Rigling, Vance F.—536 Simpson Ferry Road, New Cumberland—6128

Delaware County

Ackermann, Reynold H.—267 Cooper Ave., Lansdowne—6127
Carpenter, Samuel T.—Swarthmore College, Swarthmore—6107
Kirsch, J. E.—203 West Ave., Wayne—6138
Norrett, Charles Reich—347 Sagamore Road, Brookline, Upper Darby P. O.—6136
Wilkinson, Fletcher K.—106 Leon Ave., Norwood—2093

Franklin County

Kempter, Guyton—150 East Queen St., Chambersburg—6117

Indiana County

Shields, William Jay—239 Church St., Indiana—6109

Lackawanna County

Curran, Leonard J.—Penna. Dept. of Highways, Scranton—6142

Lebanon County

Giele, Walter S.—935 Chestnut St., Lebanon—6112

Lehigh County

Stoess, Henry A., Jr.—2205 Liberty St., Allentown—6102 (Member Lehigh Valley Chapter)

Mercer County

Ullery, Richard A.—R. D. No. 6, Greenville—6104

Montgomery County

Dix, Verdon Ludy—310 Oakdale Ave., Glenside—6101

Northampton County

Douthett, George M.—Green Pond Road—Easton—6145
Riley, John H. T.—632 7th Ave., Bethlehem—6150

Philadelphia County

Bossert, Samuel—7035 Walker St., Philadelphia—6121
Harrison, Jerome G.—105 S. 12th St., Philadelphia—6129
Johnson, Herbert Guil, 2045 N. Broad St., Philadelphia—6134
Jones, Arthur R.—829 Unruh St., Philadelphia—6141
Priest, Samuel B.—8607 Brierdale Road, Philadelphia—6139
Wright, George I.—528 Commercial Trust Bldg., Phila.—6111

Out Of State

Hill, Donald G.—P. O. Box 81, Gilbertsville, Kentucky—6118
Gelbke, Arthur W.—226 Keats Ave., Elizabeth, N. J.—6122
Kirgan, John—804 Chancellor St., Elizabeth, N. J.—6120
Gardner, John M.—19 Rector St., New York City—6132
Thomas, Vincent P.—c/o Gillinder Brothers, Inc.. Port Jervis, N. Y.—6130
Dennen, William Llewellyn—59 Ingalls Road, Fort Monroe, Va.—6103
Hughes, Edgar Temple—750 N. Dinwiddie St., Arlington, Va.—6125

Pittsburgh Chapter

Board of Directors meets second Thursday each month, except July and August.

Chapter meets third Thursday each month, except July and August.

Post-War Planning is receiving attention from the Chapter. According to the Pittsburgh Engineer:

> 'Here is an opportunity for a real public service by engineers. What are we doing about it? If the Professional Engineer wants his place in the sun, here in Post-War Planning is surely a place he can serve and serve well. It is up to Engineers as individuals and their organizations to take an active part in preparing and executing these programs and not only this but to help impress upon his fellow citizens the necessity for Post-War planning in the interest of all."

The publication editorializes on the Pennsylvania Registration Act and offers some interesting comments from which the following has been excerpted as informative as well as appealing:

> "One wonders just what the opinion of a person is concerning his profession who uses this paragraph as the basis of his exemption from the provisions of the engineers registration law. Can it be possible that any person who has taken the pains to educate and train himself and so qualify to become an engineer has so narrow and restricted a view of the value of his profession to society? Do you believe that your activities do not involve safety to life, health or property? In short mankind gains nothing from your activities. It is understood quite readily a person with very few qualifications might have such a view, but to one qualified to practice we are rather adverse to believe he knowingly holds so low a view of his profession, even though he does without thinking, sometimes allow others to put him in this very unsatisfactory position. From the legal point of view just what is the picture. Perhaps the main issue is this police power or as expressed in this paragraph 'Unless the same affects the public safety or health or the property of any other person, firm, copartnership or coporation.' "

WEST VIRGINIA

The new Board of Directors held its initial meeting at Charleston with Engineers Owen M. Jones, W. S. Downs, R. P. Davis, Charles Snyder, W. S. Schmidt, George C. Burnes, P. K. Pierpont, George W. Zimmer, E. D. Baker, James N. Wallace, Clarence L. Churchill, Robert Williamson and Ross B. Johnston in attendance.

Among the items which received attention were reports of officers, state legislation, labor contracts and the Kilgore Technilogical Bill.

The recent decision of the National Labor Relations Board in rejecting a C.I.O. petition to merge supervisory employees with the contractual unit of production was regarded as a definite step in support of the action of the Board in opposing the proposal.

Reports from the various chapters concerning the Kilgore Measure are still too incomplete to justify formulating an opinion for presentation to the sponsor of the bill.

BRAZILIAN TRANSPORTATION

(*Continued from Page* 16)

NATIONAL TRANSPORTATION PLAN

The lack of a definite National Transportation Plan and the various attempts for its realization have been apparent. During the Empire two plans were presented—the first known as the Honorio Bicalho Plan, the second as the plan of the First National Railroad Congress—neither of these was supported by law or government approval. With the advent of the Federal Republic, the plan was organized again but due to constitutional and legislative technicalities, never attained the blessing of an approving law. Finally, after meticulous studies and the complete report of a specially appointed commission, President Vargas issued the decree of June 29, 1939, approving the actual National Transportation Plan.

The National Transportation Plan refers to the transportation systems, main and connecting lines, including existing and projected lines covering the whole country and affecting the political, administrative and economic interest of the Union. The plan does not take into consideration the economic and financial opportunities for construction nor does it go into detail regarding local connections. Therefore, at the time of the report, the country possessed 33,055 kilometers of railroad, but only 17,775 kilometers were considered of national importance. Considered of national interest are:

(1) Those connecting the Federal capital to one or more State capitals.
(2) Those connecting any point of the Federal system to any point at our frontiers.
(3) Those constituting parallel lines less than 200 kilometers from the frontiers.
(4) Those connecting two or more main lines of general interest with the purpose of establishing shorter connection between States.
(5) Those having military objective.

The map shows the whole river and railroad transportation system, existing and projected.

The plan covers nine main longitudinal systems (running approximately from south to north), eleven transversal systems (running approximately from east to west) and eighteen connecting systems. It has a total length of 51,076 kilometers with 11,180 kilometers of river navigation. The railroad net projected to complete the plan requires 22,121 kilometers. At this particular time the first of the longitudinals projected is under way of construction. With the existing extension of 2,373 kilometers, 1663 kilometers more are necessary to complete it. It will connect the extreme South, through the Capital of the Republic, with the northeastern bulge of Brazil, so well known to all Americans.

ACTUAL AVAILABLE FIGURES

Due to the War, statistical figures have not been published since 1940.

The extension of Federal Government, State and private ownership and operation are as follows:

Federal Government Owned kilometers — 62%	21,368
State Government Owned kilometers — 9.6%	3,274
Private Companies Owned kilometers — 28.4%	9,652
Federal Government Operated kilometers — 38.5%	13,068
State Government Operated kilometers — 30.6%	10,550
Private Companies Operated kilometers — 30.9%	10,586

It may be interesting to observe that the total Brazilian Railroad net is composed of:

31,752 kilometers with 1 meter gauge
2,073 kilometers of 1.60 gauge
729 kilometers of 0.76 gauge

The Paulista Railroad is executing a long range program to unify the main lines to 1.60 gauge, together with the improving of grades and curves. The Central of Brazil Railroad is executing a wide program of grade and curve improvement at several extensions of the main line, and the Sao Paulo Branch is now constructing one entirely new road bed.

Perhaps in all this you have seen a similarity between the struggles of the United States of America and the United States of Brazil for development and advancement. If you have, it is still another and very good reason for the growing solidarity between these countries.

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FEDERAL-AID PLANNING

(*Continued from Page* 8)

made by State or local agencies to the Board and, prior to their approval by the President, the Board shall refer all such requests to the Federal Works Agency, the Federal Security Agency, the National Housing Agency, and/or other appropriate Federal agencies, and these agencies shall review such requests and submit their comments and recommendations thereon to the Board; *Provided further,* That the Federal agency or agencies through which such an advance is made shall certify thereafter to the Secretary of the Treasury that the plan preparation under such an advance is being carried out in accordance with the provisions of this title and that payment therefor is justified.

"SEC. 202. State or local agencies receiving the advances authorized by section 201 of this Act shall repay the amounts thereof to the United States, if and when funds become available by reason of appropriation by, or grant, gift, or loan to, such State or local agencies for the undertaking of the public works and improvements so planned: *Provided,* That all such repayments of advances by State or local agencies shall be remitted to the Secretary of the Treasury and shall be covered into the Treasury of the United States to the credit of "Miscellaneous receipts".

"SEC. 203. (a) None of the provisions of this title shall be construed as empowering State or local agencies to accept advances for plan preparation under section 201 of this Act when such an acceptance would be contrary to State law.

(b) All advances of funds to State or local agencies under section 201 of this Act shall be for plan preparation by the staffs and consultants of such State or local agencies with such provisions as may be necessary to protect the interests of the United States.

"SEC. 204. Advances under section 201 of this Act shall be made only when plan preparation provided for by such an advance is for planning a project which, when constructed, will be in accord with a long-term plan for community, State, regional, or national development: *Provided,* That such allotments or advances may also be subject to such further terms and conditions consistent with the intent and provisions of this Act as the President may prescribe from time to time.

"SEC. 205. The President from time to time, but not less frequently than once every three months, shall transmit to the Congress a detailed report of the advances made under the authority of section 201 of this Act.

"SEC. 206. It is hereby authorized to be appropriated such sums as may be necessary for the administration of this title."

Space does not permit of the reproduction of other recent measures of a similar kind, some of which are: House Resolution 243 (May 25th) which provides that the Committee on Roads shall make complete studies of certain highways and bridges; H.R. 1898 (Representative Lynch of New York) amended as a result of President Roosevelt's suggestion made on May 22nd which provides for a Post-War Planning Program, (has Presidential support); Senate 1162 by Senator Eastland of Mississippi authorizes expenditure of highway funds for repairs and reconstruction; Senate Resolution by Senator McFarland of Arizona would appoint committee to study hydro-electric power distribution; Senate 1163 by Senator Wagner of New York for the purpose of encouraging the development of American cities by private and public improvement, provides for loans and grants aggregating $1,000,000,000. to carry out a program during the next fiscal year.

MODEL LAW CONFERENCE

(*Continued from Page* 11)

qualified so to practice and shall be registered as hereinafter provided; or it shall be unlawful for any person to practice or to offer to practice in this State..... under the provisions of this act.

Other Revisions

"Upon suggestions by Mr. Richards—

"It was *voted* that in the fourth line of the third paragraph of Section 15, 'Certificate — Seals', the word 'prepared' be substituted for the word 'approved', the sentence to read: . . . Plans, specifications, plats and reports prepared by a registrant shall be stamped. . . .

"It was *voted* that the 8th to 10th lines of Section 18 be amended to read as follows: . . . shall be held to apply to any public work wherein the expenditure for the complete project of which the work is a part does not exceed two thousand dollars ($2,000.000).

"It was *voted* that the 8th to 11th lines of Section 19, now reading 'Inter-State Registration', be amended to read as follows: . . . applicant's qualifications meet the requirements of this act and the rules established by the Board.

"Having completed discussions of all items on the agenda and having voted on all suggested revisions of the Model Law, there followed a brief discussion by the Conference of postwar conditions that will be caused by the activities of men who are not engineers but who will have held positions with engineering titles with war agencies or who will have been in engineer branches of the armed services during the present war. "It was stated that the profession would be faced with this situation after the war and that the best way to control it is through the State Registration Laws — their complete application and enforcement.

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WHAT'S NEW

And Coming In The Whirl of Change

(News from the industry — gathered by the publisher)

LEE E. COOPER, writing in the New York Times about the need for sound post-war programs to guide building activity in the critical reconstruction days which lie ahead, says that leaders of business are now deeply concerned.

"Manufacturers of building materials and equipment anticipate busy days after the war, and believe that construction work and release of the backlog of demand for homes will be perhaps the major factor in taking up the economic slack when peace comes, but they recognize that advanced planning is vital to keep the civilian economy on an even keel in the days of readjustment."

"Leaders of the industry, represented by the producers council, laid plans at their annual meeting a few days ago in Cincinnati to cooperate with other industries to see that proper programs are mapped out ahead of time to absorb many soldiers and war workers back into private work under a slogan of "maximum employment, production and consumption."

EARLY CONFERENCE PLANNED. "They have announced their intentions of organizing a general post war planning conference of construction interests to be held late this year, or early in 1944, in keeping with their conviction that "the millions of people who look to construction as the source of employment and income expect this industry to be the most vital element in the re-establishment of the nation's peace time economy.

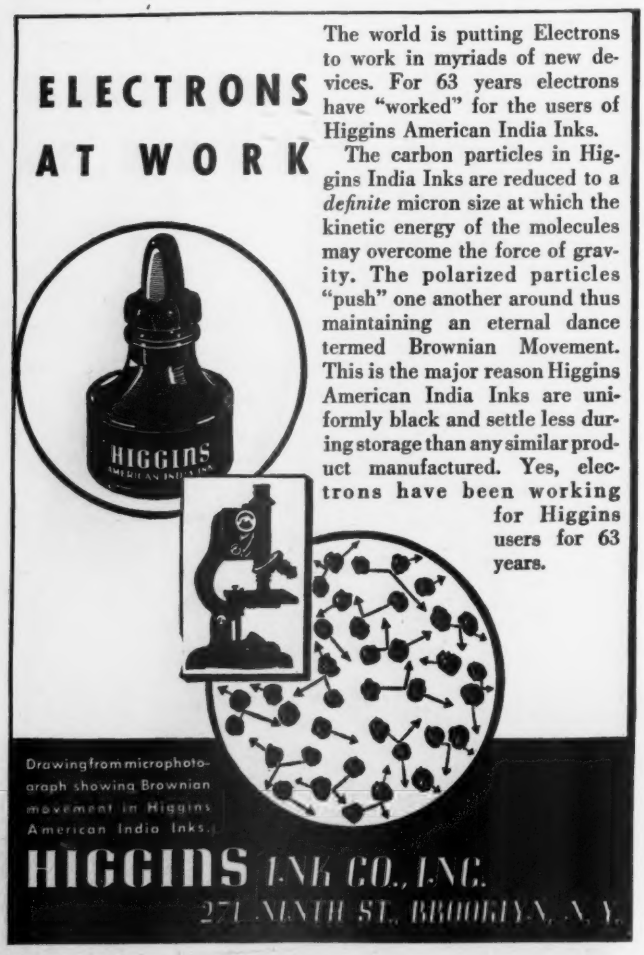
"New housing, plant improvements, demand for new products and replacements, slum clearance and urban planning will be sources of much business."

"Purchasing power and consumer demand for durable goods will be so heavy that some measure of price control and rationing will be necessary for quite a while after the war to prevent disastrous inflation, Stuart M. Crocker, of New York, V. P. of the General Electric Company, and Wilson E. Wright, Chairman of the Construction forecasts Committee of the council, agreed."

JOB PROBLEM IS CITED. "Mr. Crocker, who is Chairman of the Advisory Board of the Council, cites the uncertainties of employment entailed in the vast problem of putting men back into industry. He points out that there will be "from two to two and one-half times as many persons to be re-employed as were out of work at the worst point in the depression."

"He expresses the belief that continued high taxes and necessity for liquidation of war debt will preclude broad participation by government in any new "pump priming and depression formulas," and predicts that capital financing for new enterprise after the war will be comparatively easy, "especially if war contracts are settled promptly."

"RUSSELL G. CREVISTON, General Chairman of the post war committee of the product council, reports that the organization is prepared to enlist the cooperation of all equipment manufacturers and those in related lines to ease post war business difficulties; that it will prepare data on the probable length of time for reconversion of various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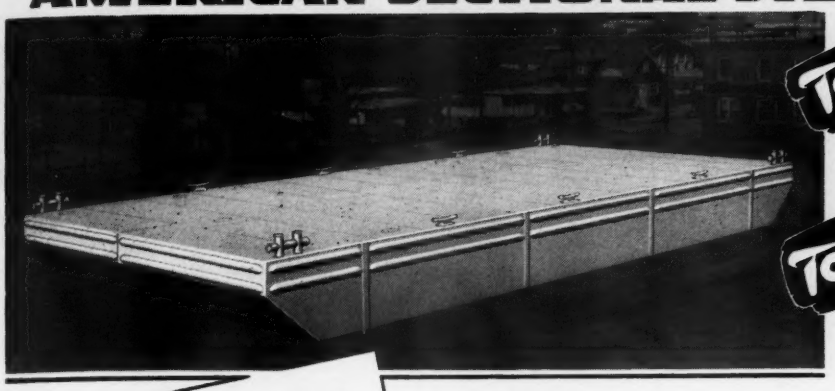

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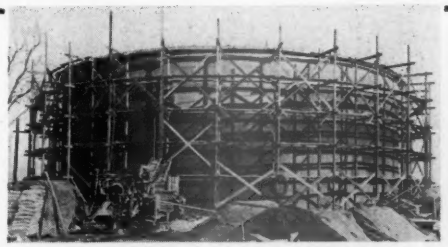

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plants to civilian work; outline a system for orderly demobilization of men of the industry now in the armed forces, and seek to determine the possible effect of technological developments on future construction activity and markets."

"WILLIAM BENTON, of the Committee for economic development warned the industry that it must eliminate "monopolistic practices" that tend to "restrict both employment and productivity and keep prices up," or face the possibility of government intervention."

Mr. Benton said he saw a prospect that residential construction would become the main national project in the reconstruction era if the building and equipment industry corrected these conditions and thus put itself in a position to play its normal "vital role in the future of the free enterprise system."

FORESIGHTEDNESS, is the subject of a recent pronouncement of H. K. Ferguson, of Cleveland, one of the members of the National Society of Professional Engineers. What he says is of interest to all, and most ominously awakens serious thinking. We quote:

"War orders are being completed. Backlogs are diminishing. You must soon resume production of necessary civilian products. You can use substitute materials—get moderate allocations of critical materials—keep machinery at work."

58,000,000 JOBS NECESSARY FOR THE POST WAR, says Paul G. Hoffman, President of Studebaker, also Chairman of Industry's committee for Economic Development;

"Industry will have to supply something like 58,000,000 full-time jobs, a jolting 12,000,000 more than in the 'good year' of 1940. That means a United States output of goods and services of some 145 billions of dollars.

"The very toughness of the assignment makes clear the necessity of starting now to plan. When the fighting is over, ex-soldiers on street corners selling apples—people starving in one part of the country while food surpluses rot in another would be death rattles for private business."

As a start for any planning, Hoffman listed; (1) revision of tax laws to restore rewards for risk-taking (those who

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risk create jobs); (2) restoration of competition to the "fullest possible extent"; (3) a solution for the special problems of small businesses which have found it "too tough to be born, even tougher to stay alive"; (4) recognition that "those who persist in thinking as isolationists are headed down a blind alley."

WORTHINGTON, in the opinion of this department, is a name that stands for standards, somewhat similar to the word "sterling." When the WORTHINGTON PUMP AND MACHINERY CORPORATION puts its reputation and hallmark on a new development, or a new product, experience suggests that it justifies the concern and interest of those whom the product serves.

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* * *

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